

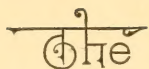
BIRDS *of* MAINE

ORA WILLIS KNIGHT





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BIRDS OF MAINE

THE Maine Bird Book is now in press, and will be sent to subscribers in all probability not later than April 15th, 1908, which will be in ample time for use in the Spring migration. This is the only work ever published which is devoted exclusively to our Maine birds, giving their distribution in Maine as well as elsewhere, showing their relative abundance in each county, giving full descriptions of each species in the different plumages and sexes, and containing very complete and interesting accounts of their home life, including descriptions of their nests and eggs, songs, habits, food, and many other details of their daily life.

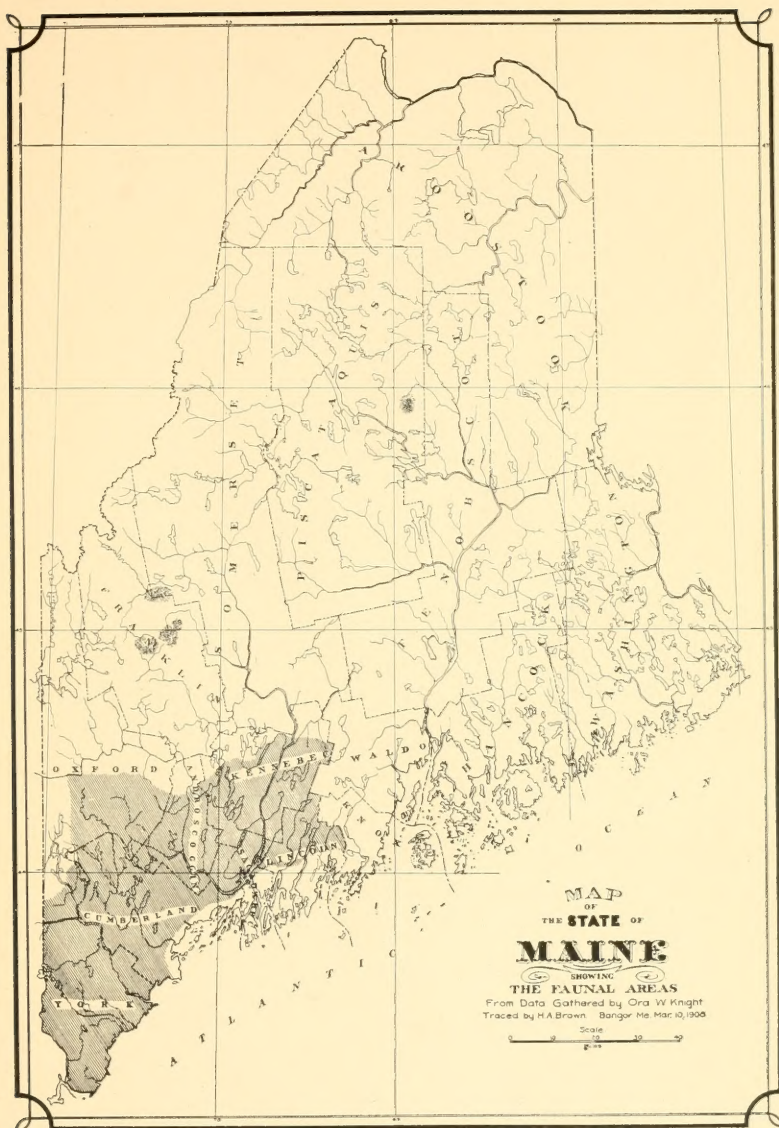
This will be the standard work of reference in all our Maine libraries, schools and homes. Thoroughly accurate, yet written in a manner to attract the beginner and the laity as well as the scientific bird student.

Advance subscriptions, accompanied by \$2.00 cash for each copy ordered, will be received up to January 15, 1908. After that date the price of the book will be \$3.00.

All copies handsomely bound in strong, durable binding. Subscriptions should be sent to

ORA W. KNIGHT,

84 Forest Ave., Bangor, Maine



FAUNAL MAP OF MAINE.
Unshaded area Canadian Fauna.
Shaded area Alleghanian Fauna.
Mountain peaks Hudsonian Fauna.

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THE BIRDS OF MAINE

WITH KEY TO AND DESCRIPTION OF THE VARIOUS SPECIES KNOWN TO OCCUR OR TO HAVE OCCURRED IN THE STATE, AN ACCOUNT OF THEIR DISTRIBUTION AND MIGRATION, SHOWING THEIR RELATIVE ABUNDANCE IN THE VARIOUS COUNTIES OF THE STATE AS WELL AS OTHER REGIONS, AND CONTRIBUTIONS TO THEIR LIFE HISTORIES

BY

ORA WILLIS KNIGHT, M. S.

Member of Maine Ornithological Society, Member American Chemical Society,
Member American Ornithologists' Union, Etc.

BANGOR, MAINE

1908

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To My Dear Wife

WITHOUT WHOSE HELP AND ENCOURAGEMENT
THIS TASK WOULD NEVER HAVE BEEN
COMPLETED I AFFECTIONATELY
DEDICATE THIS BOOK

THE BIRDS OF MAINE

Subscription Edition

The Subscription Edition of this book is three hundred copies.

I do certify that this is Copy No. 215

Orin W. H. Knight

INTRODUCTION.

SINCE early boyhood it has been a hope on the part of the author to some day write a book relating to the life histories of the birds of his native State, Maine. For years data regarding the nesting and food of our native birds has been gathered with this object in view. The List of Birds of Maine published some years ago served as a beginning by bringing out much information regarding bird distribution in the State, and now the time is at hand when a more complete work is ready for publication.

The plan of the work is arranged along the lines hereafter described. The American Ornithologists' Union Check-List and the Supplements thereto have been the base used for the numbers and scientific nomenclature. In addition to the common name of each species, as given in the A. O. U. List, an effort has been made to give as many as possible, of the local names by which each may be known.

Analytical keys to the various orders and species have been given, and under each species the various plumages are described in a few words and measurements given. The descriptions and keys are in no sense to be understood as the result of original study, but are compiled from the various descriptions given in Ridgway's Manual of North American Birds, Ridgway's Birds of North and Middle America, Chapman's Handbook of Birds of Eastern North America, Dwight's Sequence of the Plumages and Moults of the Passerine Birds of New York and other standard works, effort being made to change the language of descriptions taken from these works and retain the meaning in fewer words.

Following the description of plumage under each species is given a brief summary of the geographical distribution,

including the breeding and winter range defined in general terms, and mention of a few instances where a species has straggled to places far beyond the usual range.

Next come the county records, under which heading we find given in a few words the general manner of occurrence of each species in each county of Maine as understood by the person responsible for such statements as precede his name under the county cited. These records are for the most part taken from *A List of the Birds of Maine*, but many new records are also included. My thanks are due to the persons named below, as well as to all others cited in the text of this work, for their kindness in submitting data regarding bird distribution in Maine, such notes being generally from the county under which their names are given.

Androscoggin: E. E. Johnson, A. R. Pike, A. B. Call, J. Y. Stanton.

Aroostook: O. W. Knight, and also from published notes by C. F. Batchelder, properly credited in the text.

Cumberland: J. C. Mead, A. H. Norton, Dr. H. H. Brock, W. H. Brownson, John A. Lord, and extracts from Brown's *Catalogue of the Birds of Portland*.

Franklin: J. Merton Swain, E. M. Richards, W. A. Lee, W. E. McLain, Elmer F. Cobb.

Hancock: E. F. Murch, Alvah G. Dorr, Mrs. W. H. Gardner, O. W. Knight.

Kennebec: The Gardiner Branch, including as members W. L. Powers, Miss C. M. Burleigh, Miss S. M. Jewett, Miss L. Holmes, Miss M. Webster, Miss L. Church, M. Reed, A. P. Larrabee, Homer Dill, Maurice Royal, F. Dill, R. Hunt, G. Royal, H. Peacock, L. Harlow, H. Giddings, R. Harden, C. Austin, G. Dow, E. Welch, E. Haley, L. M. Sanborn and L. W. Robbins, supplemented by a few records from Hamlin's *Birds of Waterville*.

Knox: Fred Rackliff, A. H. Norton.

Lincoln: No observer reporting, records being given from a few notes appearing in various publications, but the fauna of this small county does not differ from that of the neighboring counties, Sagadahoc and Knox.

Oxford: J. Waldo Nash, E. E. Johnson, supplemented by notes from Maynard's "List of Birds of Coos Co., N. H. and Oxford Co., Maine" and from Verrill's "List of Birds of Norway."

Penobscot: O. W. Knight, Manly Hardy, and scattering notes from others.

Piscataquis: Wallace Homer, Charles Whitman.

Sagadahoc: Capt. H. L. Spinney, C. C. Spratt.

Somerset: C. H. Morrell, O. W. Knight.

Waldo: C. C. Spratt, R. H. Howe, and O. W. Knight.

Washington: Geo. A. Boardman, C. H. Clark.

York: Stephen J. Adams, Chas. S. Butters, and B. L. Fernald.

In this connection it is well to state that Mr. Boardman's early lists and records referred to many specimens taken on Canadian soil, and many species cited by the early writers as being taken in Maine were really taken in the adjoining Canadian Province of New Brunswick. In 1897, Mr. Boardman went over these records very carefully and as a result all references to birds wrongfully recorded as taken in Maine, but really taken in New Brunswick, which have been previously cited on his authority are now correctly given, while New Brunswick specimens are eliminated, mention being made of the reason why many of these records do not stand.

Following the county records in the text we will find a general discussion of the status of each species, descriptions of the nests, eggs, songs and call notes, and peculiar habits or actions which I may have noted, and in fact a general account of the species from the author's point of view especially as

relates to its occurrence in Maine. Descriptions of the nests and eggs are taken as far as possible from specimens actually in my collection and which have been collected in Maine. Many species do not breed in Maine, and in such instances as well as in instances where Maine collected nests were not at hand the descriptions were necessarily taken from specimens from other regions, such regions being generally mentioned. In cases where the nests and eggs were not in my collection I have been obliged to quote from the published descriptions of other authors, at the same time giving credit to the source of such information. In general however the portion of the text now under consideration is as far as possible and for the greater part the result of the author's own observations and experience.

In many cases notes regarding the nesting, song and other habits of certain species are the result of observation of only a very few individuals of the species. It is well known that some species vary in habits in different localities. For this reason the author wishes it distinctly understood that when he states certain things are so or are not so regarding a species which happens to be under discussion, that such statements of the author are to be understood as being the results of his own observation in the regions where he has observed the species, and it is to be especially understood that any statements by the author are not to be interpreted as denying that other observers may have observed the opposite to be true of a species elsewhere. We are all liable to understand things differently, and the author has endeavored to describe and interpret things from his personal point of view as carefully and accurately as possible.

The incubation period is subject to considerable personal leeway in its interpretation. It is obviously a matter of personal opinion to decide just when a bird begins incubating. For example suppose a bird lays six eggs, one each day, and is on the nest only for very short periods until the full complement

has been laid, and then begins to spend nearly all the time on the nest. In such a case the incubation should not be considered as beginning until the last egg was laid and the bird was almost constantly on the nest. On the other hand if the bird remains on the nest nearly all the time after the first egg is laid, then incubation begins with the first egg laid and not with the sixth. If the bird sits only fairly constantly many would say that incubation commenced upon the laying of the first egg, while others would be equally as positive in saying that the bird did not begin incubating until the last egg was laid. In my statements in the text regarding the incubation period I have taken the time from the day when I had reason to believe the female had actually commenced to incubate (regardless of the fact whether the set of eggs was complete or not) to the time when the first egg was hatched. It is quite true that in some cases a nest may have been visited only once on a given day, and a bird supposed to be actually incubating may have happened to be on the nest only for a few minutes at the time when it was visited. It is therefore to be understood that my observations regarding the incubation period are to be taken, subject to such variation as may be produced by errors of judgment due to not correctly understanding the true conditions in a given case.

At the end of the work there is given a hypothetical list, including such species as have been recorded from the State and afterward found not clearly entitled to be called birds of Maine, and also including species which may be expected to be taken within our boundaries some time in the future.

A summary of conclusions, a chapter on faunal areas, and a partial bibliography are also given at the end of the work.

ORA WILLIS KNIGHT.

BANGOR, MAINE, September 22, 1908.

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Summary of Characters of the Orders and Families.

(Compiled with regard to those found in Maine).

Order 1, PYGOPODES—Grebes, Loons, Auks, Murres and Puffins.

Feet webbed or lobed and placed far to the rear; tarsus much flattened; tail short and obscure; bill without tooth-like projections and sharply pointed (flattened laterally also in the Puffins); birds having a general resemblance to Ducks, being very able swimmers, not especially good flyers and spending most of their time in the water.

A. Toes provided with lobed webs—Family Podicipidæ. Grebes.

B. Toes webbed but not lobed.

1. Toes four in number—Family Gaviidæ. Loons.

2. Toes three in number—Family Alcidae. Auks, Murres and Puffins.

Order 2, LONGIPENNES—Skuas, Jaegers, Gulls, Terns and Skimmers.

Wings long, pointed; toes webbed; bills pointed or hooked; hind toe not webbed (absent in Rissa); birds having a general appearance and the manner of flight of the Gulls and Terns and spending much of their time in or over the water.

A. Lower mandible of the bill not longer than the upper.

1. Upper mandible swollen at end, curved or hooked, its covering composed of three pieces; middle tail feathers longest; birds of dark plumage. Family Stercorariidæ. Skuas and Jaegers.

2. Upper mandible not swollen, its covering of a single piece, curved or hooked; tail feathers about equal in length. Subfamily Larinæ. Gulls.

3. Upper mandible perfectly straight and sharp-pointed; outer tail feathers generally longest. Subfamily Sterninæ. Terns.

B. Lower mandible of bill much longer than the upper. Family Rynchopidæ. Skimmers.

Order 3, TUBINARES—Albatrosses, Petrels, Fulmars and Shearwaters.

Nostrils opening through horizontal nasal tubes; bill hooked; hind toe rudimentary or sometimes absent.

Nostrils joined and placed on top of bill. Family Procellariidæ. Petrels, Fulmars and Shearwaters.

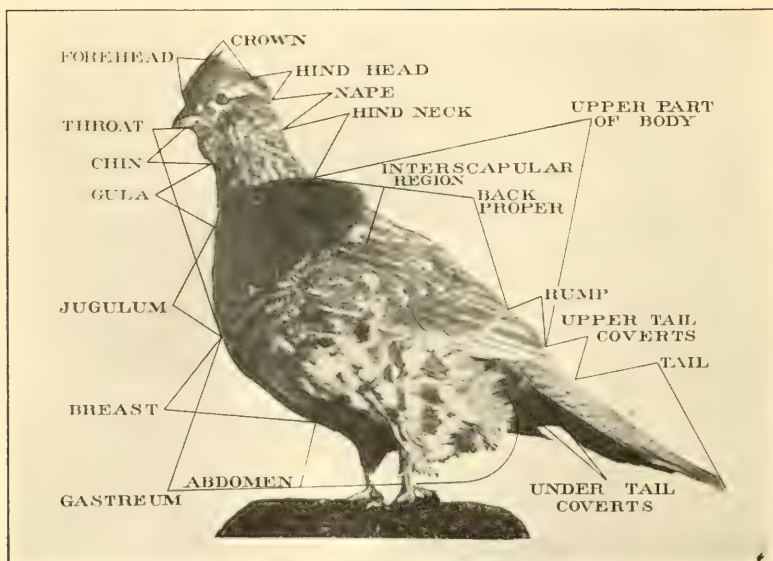
Order 4, STEGANOPODES—Gannets, Cormorants, Pelicans, Tropic Birds and Anhingas.

Toes four, the three front ones and the hind one connected by webs; large birds frequenting the water and excellent swimmers.



TOPOGRAPHY OF THE CANADIAN RUFFED GROUSE.

Photograph by Ora Willis Knight.



TOPOGRAPHY OF THE CANADIAN RUFFED GROUSE.

Photograph by Ora Willis Knight.

- A. Bill pointed, not hooked, but slightly curved at tip. Family *Sulidæ*. Gannets.
- B. Bill distinctly hooked.
 - 1. Bill more than 12 inches long with a large pouch underneath. Family *Pelecanidæ*. Pelicans.
 - 2. Bill less than 12 inches long and without large pouch. Family *Phalacrocoracidæ*. Cormorants.

Order 5, ANSERES — Mergansers, Ducks, Geese and Swans.

Toes four, only three front ones webbed; tail always present and readily noticeable; bill more or less fringed or toothed at edges; tarsus not strongly flattened.

- A. Bill long, narrow, rounded at end, and provided with serrate or toothed edges, to the mandibles. Subfamily *Merginæ*. Mergansers.
- B. Bill flattened and very much the same as that of the domestic Duck in appearance.
 - 1. Lores feathered; neck shorter than the body.
 - a. Tarsus shorter than middle toe, without claw.
 - * Hind toe without flap, not lobed — Subfamily *Anatinæ*. River Ducks.
 - ** Hind toe provided with a flap or lobe — Subfamily *Fuliginæ*. Sea Ducks.
 - b. Tarsus longer than middle toe, without claw. Subfamily *Anserinæ*. Geese.
 - 2. Lores not feathered; neck as long or longer than the body. Subfamily *Cygninæ*. Swans.

Order 6, HERODIONES — Herons, Storks, Ibises, Egrets, Spoonbills and Bitterns.

Legs and neck very long in proportion to the body; lores not feathered; toes not webbed or only slightly so, four in number, all on a level; wading birds.

- A. Bill straight, long-pointed. Family *Ardeidæ*. Herons, Egrets and Bitterns.
- B. Bill curved downward and somewhat rounded at point. Family *Ciconiidæ*. Storks and Wood Ibises.

Order 7, PALUDICOLÆ — Cranes, Courlans, Rails, Gallinules and Coots.

Lores feathered; hind toe inserted higher than the others, or on the same level in which case the forehead has a bare frontal process and the claws are much lengthened (Coots and Gallinules); toes four, hind toe rather small, birds of the marsh, bog, mere and muddy ponds; in case of the Rails skulking about in the reeds and grass.

Of the families included here the *Rallidæ* only occurs in Maine. Family *Rallidæ*. Rails, Gallinules and Coots.

Order 8, LIMICOLÆ—Shore Birds, including Stilts, Avocets, Phalaropes, Woodcock, Snipes, Sandpipers, Plovers, Oyster-catchers and Turnstones.

Hind toe less than half as long as the inner one and inserted above the level of the others (if present); hind toe absent in certain Plovers; bill long and slender except in Plovers where it is short and stout; wings long and pointed; legs long in proportion to size of bird and with lower half of tibia not feathered; nostrils in form of slits or grooves; generally birds of the sandy beaches, river shores, tide-flats, "half-tide ledges," marshes etc.

- A. Tarsus over 3.50 inches in length, more than twice as long as middle toe with claw. Family Recurvirostridæ. Avocets and Stilts.
- B. Tarsus less than 3.50 inches in length, less than twice as long as middle toe with claw.
 1. Toes with lobe-like membranes and tarsus much compressed. Family Phalaropodidæ. Phalaropes.
 2. Toes without lobed membranes but sometimes slightly webbed near base; tarsus not much compressed.
 - a. Front of tarsus covered with a continuous row of more or less square or rectangular transverse plates or scales; bill slender with blunt tip. Family Scolopacidæ. Snipes, Sandpipers, Godwits, Yellow-legs, Willets, Dowitchers and Curlews.
 - b. Front of tarsus as in preceeding; bill stout; lower portion of back white with black band at rump; general color black and white with some rufous. Family Aphrizidæ. Turnstones.
 - c. Front of tarsus covered with irregular shaped or hexagonal small scales; bill shorter than the tarsus. Family Charidæ. Plovers.
 - d. Front of tarsus covered with irregular shaped or hexagonal small scales; bill longer than the tarsus and much compressed at the end. Family Hæmatopodidæ. Oyster-catchers.

Order 9, GALLINÆ—Turkeys, Grouse, Bob-whites, Partridge, Quail, etc.

Hind toe small, elevated above others at point of insertion; toes four in number; bill short, stout and horny; wings not well adapted to long flight, being short; outer wing primaries stiff and curved somewhat; feet well adapted for scratching.

- A. Tarsus spurred and head naked. Family Phasianidæ. Pheasants and Turkeys. None at present in Maine.
- B. Tarsus not spurred and head feathered save sometimes a small space just over the eyes. Family Tetraonidæ. Grouse, Bob-whites, Partridge and Quails, so-called.

Order 10, COLUMBÆ — Pigeons and Doves.

Bill grooved and with the nostrils opening in a soft fleshy swollen membrane (the cere); toes all on same level, four in number; shorter front toe and hind toe about same length. Family Columbidae. Our well known Pigeons and Doves.

Order 11, RAPTORES — Vultures, Falcons, Hawks and Owls.

Bill with a fleshy membrane (cere) at base in which the nostrils open; bill very stout with upper mandible terminating in a strong well marked hook downward; toes provided with stout, strong, sharp, curved talons adapted for grasping and tearing: toes four, the hind one usually as long or longer than the shortest front one (except in the Vultures).

- A. Front of face rather flattened and having the appearance of a circular disk surrounding the eyes; plumage very soft; tarsus feathered. The only Maine family is Family Bubonidae. Horned, Hoot, Screech, Cat and Snowy Owls.
- B. Front of face not flattened and not having the appearance of a circular disk surrounding the eyes; plumage firm; tarsus not noticeably feathered.
 - 1. Head generally bare; plumage black; hind toe smaller than the others. Family Cathartidae. Buzzards and Vultures.
 - 2. Head not bare; hind toe equalling or longer than shortest front one. Family Falconidae. Falcons, Hawks, Eagles.

Order 12, COCCYGES — Cuckoos and Kingfishers.

Toes two in front and two behind or else with the middle and outer ones joined for half of their length; bill without soft swollen membrane above; tail feathers softish at ends and rounded.

- A. Middle and outer toes joined half their length. Family Alcedinæ. Kingfishers.
- B. Toes two in front and two behind. Family Cuculidae. Cuckoos.

Order 13, PICI — Woodpeckers, Flickers and Sapsuckers.

Bill strong, chisel-like and adapted for working in wood; toes four, two in front and two behind except in the three-toed Woodpeckers which have only three toes, two in front and one behind; tail feathers stiff and pointed, well adapted for being used to brace against the trunk of a tree. Family Picidae. Woodpeckers.

Order 14, MACROCHIRES — Goatsuckers, Nighthawks, Whip-poor-wills, Swifts and Hummingbirds.

Size very small with long, very slender pointed bill, or else birds of medium size with short small bill and large gaping mouth; feet small and weak; wings long for size of bird, pointed.

- A. Bill long, slender, upper parts green, iridescent, size diminutive. Family Trochilidae. Hummingbirds,

- B. Middle toe with comb-like edge; bill small and weak, mouth very large; plumage mixed black and brown, soft, closely resembling in general colors and appearance the surface of the ground; birds of terrestrial habits in daytime, nocturnal fliers. Family Caprimulgidae. Goatsuckers, Nighthawks and Whip-poor-wills.
- C. No comb-like edge on middle toe; tail feathers tipped with pointed spines; plumage dark; birds of diurnal flight, pre-eminently aerial in habit. Family Micropodidae. Swifts.

Order 15, PASSERES — Perching Birds including Flycatchers, Crows, Ravens, Blackbirds, Jays, Orioles, Larks, Sparrows, Grosbeaks, Finches, Swallows, Vireos, Shrikes, Warblers, Kinglets, Chickadees, Creepers, Thrushes, Robin etc.

Tail twelve feathered; toes four, three in front and one behind; tarsus as long or longer than lateral toes; hind toe fully as large as middle toe; toes all on same level; lower portion of thighs feathered.

- A. Back of tarsus rounded like front, not compressed.
 - 1. Nail of hind toe not as long as middle toe without nail; rear face of tarsus not divided into reticulate plates. Family Tyrannidae. Kingbirds, Pewees and Flycatchers.
 - 2. Nail of hind toe as long as middle toe exclusive of the nail; rear face of tarsus divided into distinct plates. Family Alaudidae. Larks.
- B. Back of tarsus compressed, two plates uniting behind in a sharp ridge.
 - 1. Primary wing feathers seemingly only nine.
 - * Tip of bill slightly hooked. Family Vireonidae. Vireos.
 - ** Tip of bill not hooked.
 - a¹. Gape twice as long as culmen; outer primary over twice as long as inner one; bill short, deeply cleft, broad. Family Hirundinidae. Swallows.
 - a². Gape not twice as long as culmen; outer primary less than twice as long as innermost.
 - b¹. Bill not notched.
 - c¹. Bill conoid or angle of gonys forward of nostril; no bristles at gape. Family Icteridae. Blackbirds, Orioles. Cowbirds, Meadow-larks.
 - c². Bill not conoid; angle of gonys never forward of nostril.
 - d¹. Hind claw far shorter than its toe; tertiary feathers not elongated, their tips far from equalling the longest primaries. Family Mniotiltidae. Wood Warblers.
 - d². Hind claw nearly as long to longer than its toe; tertiary feathers much elongated with their tips nearly reaching end of longest primary. Family Motacillidae. Wagtails, Pipits.
 - b². Bill notched.

- c¹. Nostrils either concealed by feathers, or if not then pointed at the front and with a distinct membrane overhanging, or the base of cutting edge of bill distinctly angled. Family Fringillidæ. Sparrows, Finches and Grosbeaks.
- c². Nostrils not concealed by feathers, rounded at front, without overhanging membrane; base of cutting edge of bill not angled. Family Tanagridæ. Tanagers.
- 2. Primary wing feathers ten in number.
 - * Tarsi plated or scutellate only at extreme base.
 - a¹. Wing less than three inches long; young, not spotted. Family Sylviidæ. Kinglets and Gnatcatchers.
 - a². Wing more than three inches long; young spotted. Family Turdidæ. Thrushes, Robin, Bluebird, etc.
 - ** Tarsi divided into plates or distinctly scutellate.
 - a¹. Tail feathers stiff and pointed. Family Certhiidæ. Creepers.
 - a². Tail feathers not stiff and pointed.
 - b¹. Bill strongly hooked and hawk-like, notched. Family Laniidæ. Shrikes.
 - b². Bill either only slightly or not at all hooked.
 - c¹. Tarsus shorter than or at most equalling middle toe and claw; bill wider at base than length of gonys; head crested and tail yellow tipped. Family Ampelidæ. Waxwings.
 - c². Tarsus longer than middle toe and claw or bill narrower at base than length of gonys.
 - d¹. Bill slightly but noticeably hooked at tip. Family Vireonidæ. Vireos.
 - d². Bill never hooked at tip.
 - e¹. Nasal feathers never pointed forward.
 - f¹. Second primary longest; first primary very minute; bill elongate-conical. Family Sturnidæ. Starlings.
 - f². Second primary not longest; first primary longer than tips of coverts; bill linear, culmen generally curved, bill sometimes curved. Family Troglodytidæ. Thrashers, Mockingbirds, Catbirds and Wrens.
 - e². Nasal feathers always pointed forward.
 - f¹. Wing more than four inches long; nostrils concealed by tufts of bristles. Family Corvidæ. Crows and Jays.
 - f². Wing less than four inches long.
 - g¹. Bill slender, notched. Family Sylviidæ. Kinglets and Gnatcatchers.
 - g². Bill either long and slender or short and stout but not notched: perceptibly conoid. Family Paridæ. Nuthatches, Titmice and Chickadees.

THE BIRDS OF MAINE

Order PYGOPODES. Diving Birds.

Suborder PODICIPEDES. Grebes.

Family PODICIPIDÆ. Grebes.

Key to the species of the PODICIPIDÆ.

- A. Wing under 6.50 inches, bill under 1.20 inches in length.
 - 1. Depth of bill at nostril over 0.35 inch. Pied-billed Grebe.
 - 2. Depth of bill at nostril under 0.35 inch. Horned Grebe.
- B. Wing over 6.50 inches, bill over 1.20 inches long. Holbøll's Grebe.

Genus COLYMBUS. Linnæus.

Subgenus COLYMBUS.

2. *Colymbus holbøllii*. (Reinh.). Holbøll's Grebe.

Plumage in summer adults: throat, sides of head, belly silvery white; back blackish changing to black at back of neck which with crest and top of head is black; sides somewhat rufous, and front and sides of neck decidedly so. Winter adults: upper parts dark, brownish tinged; under parts not so pure glossy white. Immature birds: similar but with neck and sides grayish instead of rufous. Wing, 7.25 to 8.00; culmen 2.00; tarsus 2.25.

Geog. Dist. — Entire North America, Greenland, eastern Siberia, southward to Japan; breeding from northern Minnesota northward through interior North America and in fall migrating southward even to South Carolina and Nebraska.

County Records — Androscoggin; I have a male which was taken on Lake Auburn, Oct. 8, 1899, (Johnson, J. M. O. S., 1900, p. 32). Cumberland; not uncommon winter resident, (Lord). Hancock; occasional fall to spring. (Knight). Kennebec; one taken in the Kennebec River at Augusta, Dec. 10, 1897, (Noble, Me. Sp. Feb. 1898, p. 21). Knox; winter resident, (Norton). Sagadahoc; not common, few in winter, (Spinney). Waldo; occasional fall to spring, (Knight). Washington; common, (Boardman). York, (Butters),

Though a regular winter visitor along the coast from as early as the last of September to late April (April 24, 1900, Lord) and to be confidently expected almost anywhere in the coast district during this season, the species cannot possibly be called common. Occasionally individuals are likely to be

observed or taken on inland bodies of water in the State, but no such instances are known during the breeding season and reports of its breeding in Maine cannot be substantiated. The nests are ordinarily found floating on the water among reeds and other vegetation in sloughs, and marshes in inland localities. A set of four eggs taken at Snake Lake, Alberta, Canada, June 24, 1895, were said to have been found in a nest composed of decayed vegetation, floating on water in a marsh. These eggs are dirty or greenish white, unspotted, and somewhat stained by the nest material which they were in contact with. They measure 2.19 x 1.44, 2.13 x 1.41, 2.13 x 1.47, and 2.16 x 1.45 inches. The number of eggs laid may vary from two to five. As far as can be ascertained the food of these birds along the coast consists of small fish and surface swimming crustaceans, while in inland regions they have been reported as eating tadpoles as well as fish. Though pre-eminently at home in the water, preferring in case of danger to seek safety by diving rather than by flight, these birds are nevertheless able to fly long distances with considerable rapidity. When on the wing they fly with rapid strokes, head and feet stretched full length in front and behind, respectively. Their call note is said to be a rasping cough, or croak.

Subgenus DYTES Kaup.

3. *Colymbus auritus* Linn. Horned Grebe.

Plumage in summer adults: back and wings blackish, ranging to glossy black on neck, throat and top of head; upper portion of breast and adjoining part of neck, sides and lores chestnut; stripe and plumes near eye buffy yellowish; lower portion of breast and belly white. Winter adults and immature plumage: above a general grayish-black; beneath white, sometimes locally washed with grayish. Wing, 5.40 to 5.75; culmen, 0.95; tarsus, 1.75.

Geog. Dist.—Northern hemisphere, breeding in this country from the northern tier of states northward; in winter found southward to the Gulf of Mexico.

County Records.—Cumberland; rare, near Bridgton, (Mead); rather common in migrations, a few probably winter, (Brown, C. B. of P. p. 36). Hancock; common migrant, (Dorr). Knox; winter resident, (Norton). Oxford;

very rare, (Nash). Penobscot; one shot at East Orrington, (Hardy). Piscataquis; rare, (Homer). Sagadahoc; common December to April, (Spinney). Waldo; several seen and one shot near Islesboro, (Howe, J. M. O. S. 1900, p. 26). Washington; common, a few breed, (Boardman). York; (Butters).

Of rather general occurrence along the coast in spring and fall, also occasional in winter, while in the interior the species occurs rarely in spring and fall. It is usually to be found in the State from September to late April, and is only known to have been found breeding within our limits in Washington County where of course it remained through the summer. There are no recent records of it breeding here. The nesting habits are in general not different from those of the other Grebes. A nest found near the Pine Ridge Indian Reservation, South Dakota, June 25, 1895, was floating on the water in an open place amidst a tangle of floating vegetation. This nest was made of wet green moss (presumably water vegetation of a mossy character) and the eggs were stated to have been covered with this same material. The diameter of the nest was six inches and the depth outside four inches, it being nearly flat on top. The six eggs are a dirty cream buff color owing to their being dyed by the nest material, but if cleaned thoroughly they would be bluish white. They measure 1.72×1.19 , 1.67×1.21 , 1.73×1.25 , 1.70×1.20 , 1.69×1.15 , 1.63×1.20 inches. While the usual number of eggs laid is five or six, it varies exceptionally from two to seven. The food, habits, actions, etc., do not vary greatly from those described under the preceding species.

Genus *PODILYMBUS* Lesson.

6. ✓ *Podilymbus podiceps* (Linn.). Pied-billed Grebe; Devil-diver; Hell-diver; Water-witch; Diedapper; Dabchick; Thick-billed Grebe; Carolina Grebe; Frog-in-Throat.

Plumage in summer adults: throat and upper parts brownish black to black; breast, sides, front and sides of neck dusky washed; belly, white; bill white or whitish with a black band across the middle. Adult winter

plumage: throat dull white; lower parts without dusky wash; bill brownish tinged and without black band. Immature plumage: similar to winter plumage but sides of head with brownish streaks. Downy young: with head and neck white and black striped; rufous spot on crown; upper parts dark and striped with whitish. Wing 4.60 to 5.10; culmen 0.90, tarsus 1.50.

Geog. Dist. — From the Argentine Republic through Mexico and the West Indies northward to Great Slave Lake and Hudson Bay, breeding locally throughout its range; wintering from latitude of New Jersey southward.

County Records. — Androscoggin; common summer resident, (Johnson). Aroostook; rare, breeds, (Batchelder, B. N. O. C., 7, p. 152). Cumberland; common, (Mead); have taken eggs at Rangely Lakes, (Cobb). Hancock; common, (Dorr). Kennebec; rare summer resident, (Robbins). Knox; (Rackliff). Penobscot; very local summer resident in small colonies, (Knight). Piscataquis; local summer resident, (Knight). Sagadahoc; not common, seen only in fall, (Spinney). Somerset; a very local summer resident, breeding in scattered colonies of a few individuals, (Knight). Waldo; occasional at least in fall, (Knight). Washington; common, a few breed, (Boardman).

This is our commonest and best known Grebe and occurs very generally along the coast from September to November, and rather less often in April and May. In the interior it occurs rather generally but never commonly on various bodies of water during the spring and fall, while locally it remains to nest in small scattered colonies of two to six or eight pair of birds. Small sluggish ponds and lakes where there is abundant growth of rushes and other water vegetation extending above the surface are favorite breeding localities. The birds arrive in these places in May (as soon as the ice has left) and may exceptionally remain as late as the last of November (Athens, Somerset Co., Morrill). A nest found near Palmyra, Maine, June 6, 1897, was composed of a very bulky mass of semi-decayed cat-tails, rushes, equisetums and sedges, floating on the water and attached to some bushes growing in the water. The inside diameter of this nest was five inches and the depth of the nest cavity three-fourths of an inch, while the heap of material extended downward into the water over three feet. The five eggs were dull dirty white much stained by the decayed vegetation surrounding them and with which they were covered

so as to be entirely hidden from view. These eggs measure 1.75×1.20 , 1.74×1.22 , 1.82×1.19 , 1.76×1.19 , 1.78×1.19 inches. Though sometimes nests seem to be made of material brought to the spot by the birds, more often they seem to select some naturally accumulated mass of vegetation which they hollow out and make appropriate additions to until their fancy is suited. While the birds are not often observed unless very carefully hunted for during the nesting season, their presence on any given body of water is easily ascertained by the ear, after which careful search will result in seeing them. They swim about amidst the water vegetation, dipping beneath the surface with head and neck or gracefully raising the fore part of the body and plunging entirely beneath the surface without any seeming effort. Their love call, a peculiar gurgling, spluttering, gasping cough, or croak which it is hard to describe, but which once heard will be always remembered, is frequently uttered during the breeding season. While totally different from the notes of the Cuckoo, the call may be best compared to that of the Cuckoo in a way. While swimming the head and neck, or when alarmed often only the head, appear above water. The nesting season is usually in June, sometimes it is even July before the eggs are laid and these may vary from four to ten in number. It is hard to find the parent on the nest during the daytime, either because it is able to steal away so quietly at the approach of intruders, or because it rarely is on the nest during the day. At any rate the eggs are usually covered with a mass of vegetation sufficient to hide them from sight and the parent is absent. However the parents may be heard calling to each other from among the reeds, and a careful search near the edge and among them will usually reveal the nest. The downy young are able to take to the water very soon after hatching, and such of them as do not fall a prey to pickerel, bass or other predaceous fish grow very rapidly. The food of the adults consists of tadpoles, small fish, small frogs, water insects and similar animal material.

Suborder CEPPHI. Loons and Auks.

Family GAVIIDÆ. Loons.

Genus GAVIA. Forster.

Key to the species of the GAVIIDÆ.

- A. Throat black.
 - 1. Head black. Loon.
 - 2. Upper part of head and hind neck gray or ashy. Black-throated Loon.
- B. Throat not black.
 - 1. Throat and foreneck with a chestnut stripe. Red-throated Loon.
 - 2. Throat and foreneck without chestnut stripe.
 - * Wing more than 13.00 inches long and distance from base of bill to front end of nostril more than 0.75 inch. Loon (Immature).
 - ** Wing less than 13.00 inches or distance from base of bill to front end of nostril less than 0.75 inch.
 - a¹. Tarsus shorter than inner toe with claw. Black-throated Loon (Immature).
 - a². Tarsus longer than inner toe with claw. Red-throated Loon. (Immature).

7. *Gavia imber* (Gunn.). Loon; Great Northern Diver;
Call-up-a-storm.

Plumage in summer adults: head, neck and upper parts black, iridescent; throat, sides of neck, back and wings black, spotted or barred with white; breast and belly white. Adult and immature winter plumage: above blackish, not white spotted, feathers grayish margined; below white. Wing 14.80 to 15.50; culmen 3.00; tarsus 3.35; depth of bill at base 1.00.

Geog. Dist—Northern part of northern hemisphere, breeding from the more northern tier of states northward; in winter ranging south to the Gulf of Mexico and Lower California.

County Records—Androscoggin; common summer resident, (Johnson) Cumberland; summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; a local summer resident, breeding only inland, resident along coast, not common but very easily found when sought properly, (Knight). Kennebec; rare summer resident, (Gardiner Branch). Knox resident, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; local summer resident, one or two pair nesting on most of the suitable ponds and lakes, not common, from its large size and habits readily found at proper places, (Knight). Piscataquis; common breeds, (Homer). Sagadahoc;

common resident, (Spinney). Somerset; not very common summer resident, (Morrell). Waldo; breeds on one or two of the larger ponds, found along coast in summer and winter, (Knight). Washington; common breeds, (Boardman). York; common summer resident, (Adams).

Along the coast the Loon is resident, perhaps commoner from spring to fall than during the winter, never very numerous when the exact number of individuals occurring is carefully considered, but still to be found at all seasons. The species nests only on inland bodies of water, arriving in spring soon after the ice has left and remaining usually until the ice begins to form again. While one or two pair of Loons may be expected to be found nesting on each of the larger ponds or lakes throughout the State, provided there is suitable opportunity to secure a somewhat unfrequented nesting spot, the total number of these birds nesting in the State or in any one locality is never large enough to permit their being rightfully recorded as common, even by the most vivid stretch of imagination, though many have erred in this respect. As a matter of fact each pair of birds seems to have exclusive rights to a certain extensive territory, and when the number of suitable ponds or lakes throughout the State has been considered, it will be readily seen that not over 1000 pair of Loons at the outside would find (to them) satisfactory homes with proper "yard room". The actual number of pair nesting in Maine is most certainly far under the figures given, and an actual census, showing the actual numbers of each species of bird found in Maine, would most certainly result in placing the larger birds (except the Crow) far down in the list, while if the actual truth could be ascertained we would be surprised at the numbers of many species of so-called rare Warblers which occur in Maine. The Loon then is not common, it is really rather rare, but being a large bird, living under conditions where it can be readily seen or heard and easily found if sought at the proper place, the natural result is to have it reported as common by unthinking observers.

The nest (if such it can be called) is usually a mere depression hollowed out in the sand or mud with sometimes a few sticks, roots, marsh grass, and sods arranged about the edges or within the hollow. At the time of building the nest is so placed that the bird can readily scramble into it from the water, but owing to the receding level, the nest may be some little distance from the water's edge when incubation is complete. A favorite site is on an island, but when such site is not available, or for other reasons, an isolated cove may be sometimes selected to nest in. Eggs are most often laid from the middle to the last of June, sometimes but rarely as early as the first of the month. A nest containing two eggs was found on the shore of a small island at the water's edge, Flood's Pond, Otis, Maine, June 19, 1897. This was a flat nest composed of a few sticks, stems and roots of marsh grass, measuring twenty-five inches across the outside while the diameter of the slight cavity was twelve inches and its depth one and a half inches. The eggs were a dark olive brown, spotted toward the larger end with black and measure 3.56 x 2.29 and 3.60 x 2.18 inches respectively. Eggs of this species are very handsome often being boldly and heavily spotted and blotched, the spots being often most abundant toward the larger end of the egg. Usually two eggs are laid, occasionally only one (such instances being often a second laying when the first one has been destroyed) while very rarely three eggs have been found in the same nest. Fresh eggs sometimes are found as late as early July. The incubation period is very close to 29 days. The young take to the water immediately on hatching, being covered with a dirty grayish down. They swim closely behind their mother, sometimes climbing on her back to rest or perhaps to play, and even when very small are able to dive well, though not to stay under the surface long. During the incubation period a parent bird is usually on the nest during the day, and when strangers approach too near the bird leaves the nest with a sudden rush and plunge, going into the water, diving to swim

under any intruding boat which is in the way and finally to appear far away from harm. A pair of Loons and their progeny may often be seen in company pursuing their way and keeping up a more or less animated conversation. The appearance of strangers on a pond where the Loons live is often the cause for much vocal exercise among them. Along the coast these birds seem more especially voluble during impending changes in the weather, especially when a storm is approaching, so that when the fishermen hear Loons calling they say, "The Loons are trying to blow up an easterly". The call note is a long drawn maniacal sounding yell; varied by more or less maniacal laughter, ha-ha-ha's, and other voluble calls of similar nature. I have heard the species utter a peculiar "ha-ha-ha" when on the wing. They fly well, neck and legs stretched out ahead and behind respectively, but seem to hate to take wing ordinarily, preferring to trust to swimming and diving in case of danger. Their food consists almost entirely of fish.

9. *Gavia arctica* (Linn.). Black-throated Loon.

Plumage in summer adults: above black with iridescent reflections except top of head and nape which are gray or ashy; throat, sides of neck, back and wings more or less spotted, barred or streaked with white; breast and belly white. Adult and immature winter plumage: similar to the corresponding plumage of the common Loon, size of individuals smaller. Wing 11.00 to 12.00; culmen 2.17; tarsus 2.60; depth of bill at base 0.60.

Geog. Dist. — Northern part of northern hemisphere, breeding in the far north; in winter occurring rarely east of the Rocky Mountains, though reported southward as far as Ohio and Long Island.

County Records. — Washington; a specimen taken at Cutler, Maine, was received by Mr. Newell Eddy in the flesh, December 8, 1881, and is now in Mr. Eddy's collection. Mr. Eddy writes that it is a male bird in winter plumage (Cf. Maine Sportsman, September, 1898, p. 13). This is the specimen so doubtfully reported in Mr. Smith's List, but whose correct identification Mr. Eddy has since shown to be unquestionable.

Occasional stragglers of this species doubtless occur along our coast in winter, in fact though there is no evidence to prove my assertion, there seems every reason to suppose that

this species may be found along the coast somewhere every winter, escaping detection from its close resemblance to the Loon. Most of the eggs of this species in collections are from Norway, Sweden, Lapland, Finland and northern Scotland, sets from North America being rare. I have two eggs which were taken at Lulea, Lapland, June 16, 1897, from a nest at the water's edge on the shore of a pond. These eggs are olive brown, spotted with black, the spots being most frequent and heaviest at the larger end. These eggs measure 2.96 x 1.95 and 2.96 x 1.96 inches. The habits of these birds seem to be rather unknown but cannot be expected to differ from those of their near relative.

11. *Gavia lumme* (Gunn.). Red-throated Loon.

Plumage in summer adults: foreneck chestnut, head and neck ashy or plumbeous, sometimes white streaked; upper parts fuscous, white spotted; breast and belly white. Adult and immature winter plumage: throat and foreneck white; back spotted with white. Wing 10.50 to 11.50; culmen 2.20; tarsus 2.68.

Geog. Dist.—Northern part of northern hemisphere, occurring regularly in winter southward along our eastern coast to North Carolina; breeding range from New Brunswick, Quebec and Manitoba northward.

County Records.—Cumberland; common in migration (Brown, C. B. P. p. 36); a pure white individual was taken in Casco Bay in December, 1900, and seen by me at John Lord's, (Knight). Hancock; fall to spring along the coast, (Knight). Kennebec; accidental, (Dill). Knox; migrant, (Rackliff). Penobscot; immature birds quite often, (Hardy). Sagadahoc; from late fall to spring, (Spinney); a pure white one, save for a few brown spots on the back, was taken at Small Point, June 22, 1896 (Spinney, Me. Sp. Jan., 1897, p. 21). Somerset; Mr. C. W. Savage has a specimen taken at Flagstaff Pond in the fall of 1896, (Knight). Waldo; one seen near Islesboro on August 16 and September 22, 1900, by G. C. Shattuck, (Howe, J. M. O. S. 1901, p. 14); fall to spring along the coast, (Knight). Washington; common, (Boardman). York; (Butters).

Though general along the coast from fall to spring, and even occasionally reported in the summer, this species does not breed in Maine. Occasional specimens are reported about the ponds and lakes in fall, or more rarely in spring. A set of two eggs taken at Myvatn, Iceland, June 2, 1897, were

a deep olive brown well spotted with black and measure 2.96 x 1.73 and 2.95 x 1.75 inches. The food is largely fish and the habits not greatly different from those of the Loon.

Family ALCIDÆ. Auks, Murres and Puffins.

Key to the species of ALCIDÆ.

- A. Bill less than 0.70 in length. Dovekie.
- B. Bill more than 0.70 in length.
 - * Depth of bill over 0.70 at nostril.
 - 1. Depth of bill over 1.00 at nostril.
 - !. Bill more than 3.00 in length. Great Auk.
 - !!. Bill much less than 3.00.
 - a¹. Bill usually less than 1.50 in length. Tufted Puffin.
 - a². Bill usually more than the 1.50. Puffin.
 - 2. Depth of bill at nostril less than 1.00. Razor-billed Auk.
 - ** Depth of bill under 0.70 at nostril.
 - 1. Wings with white patch.
 - a¹. Greater wing coverts wholly white. Mandt's Guillemot. (Hypothetical List).
 - a². Greater wing coverts black on basal half. Black Guillemot.
 - 2. Wings without white patch.
 - a¹. Depth of bill at angle less than one-third its length; bill usually over 1.60. Murre.
 - a². Depth of bill at angle more than one-third its length; bill usually under 1.60. Brunnich's Murre.

Subfamily FRATERCULINÆ. Puffins.

Genus LUNDA Pallas.

12. *Lunda cirrhata* Pall. Tufted Puffin.

Plumage in summer adults: above black; below sooty gray; side of head at front white; a tuft of long straw-colored feathers on each side above the eye; bill olive-yellowish at base and bright red on outer portion; feet scarlet. Adult and immature winter plumage: no white on sides of head and tufts above the eye absent; portions of bill deciduous; feet flesh color. Immature similar but with upper mandible not grooved. Wing 7.50 to 8.00; culmen 1.37.

Geog. Dist. — Coast and islands of the Pacific from Santa Barbara Islands and Japan to Alaska and Bering Strait, and usually breeding within the same range. Accidental in Maine.

County Records.—Audubon figures a specimen which he states was taken at the mouth of the Kennebec River in the winter of 1831-'32, and though the occurrence of this western and rather non-migrant species in the east is a very strange and unusual circumstance, still it seems that we must accept Audubon's record backed by his figure of it as correct. Followers of De Vries might be induced to put forth a claim that Audubon's specimen was a "mutant".

Some sea fowl are very prone to wander long distances, but the species in question does not seem ordinarily so inclined. Possibly Audubon's specimen came through the "northwest passage" and followed the coast downward. Possibly an interchange or mixing of labels may have given this specimen to Maine. The truth we will never know and must accept the record as given. In their western homes these birds nest in colonies among the islands of the Pacific, each pair of birds selecting a suitable cavity or making a burrow among the rocks and in the earth. Only a single egg is laid at a time, and while in the southern portion of its range, and especially on the Farrallon Islands, two or three broods are said to be reared, only one brood can be the rule northwards. A pure white egg, sometimes faintly or even heavily spotted with scattered marks of lilac, seems to be the rule. One taken on South Farrallon Island, 35 miles west of San Francisco, July 10, 1895, measures 2.85 x 2.00. They are said to eat fish and surface swimming crustaceans.

Genus FRATERCULA Brisson.

13. *Fratercula arctica* (Linn.). Puffin; Sea-Parrot.

Plumage in summer adults: above blackish with a gray collar at back of neck; breast, belly, sides of head and throat white; a horny process on upper eyelid. Adult and immature winter plumage: portions of bill deciduous: no horny process on upper eyelid; plumage and especially the bill duller colored. Wing 6.00 to 6.25; culmen 1.75; tarsus 1.00.

Geog. Dist.—Coast and islands of the north Atlantic, south in winter on the American coast to Long Island. On our coast breeding from Matinicus Rock, northward.

County Records.—Cumberland; not common winter visitant, (Brown, C. B. P. p. 36). Hancock; winter visitant, (Dorr). Knox; two pair nesting

at Matinicus Rock in 1900, (Dutcher, Auk, 1901, p. 92); according to the best information at hand these birds were still breeding on the island in 1906. Sagadahoc; only in winter, quite scarce, (Spinney). Washington; winter visitant, a few breed near Grand Menan, (Boardman); a breeding colony was reported from Machias Seal Island as recently as 1904 by Mr. Norton, and were at that time stated to number about 300 individuals, and as these birds are rigidly protected they doubtless still breed there.

Though of the former status of these birds on the Maine coast we have only rumor to inform us, it seems likely that they once nested along the coast in greater numbers than at present and doubtless on other islands, including Seal Island on which fishermen have assured me a few pair bred as recently as 1888. The Matinicus Rock and Machias Seal Island colonies are the only ones now remaining to us. From Matinicus Rock eastward this species is resident, while westward it occurs only from fall to spring, being in summer of very limited and local distribution and in winter of general distribution along the coast. It is hardly to be called common at any time, save that possibly at Machias Seal Island this term might be applied.

Under normal conditions these birds nest in colonies, excavating a burrow in the earth in their more northern breeding places, but generally in their Maine homes placing their eggs in holes and cavities far under the rocks which form extensive island seawalls. The eggs are laid in late June and July, usually only one but in rare instances two being the complement. The parent bird is usually at home and inflicts good strong nips with its powerful bill upon any intruders. I have two sets of one egg each from Baccalieu Island, Newfoundland, which were taken July 3, 1897. One egg was fresh and the other far advanced in incubation. They were laid in nests of grass at the end of the burrows and measure 2.46 x 1.70 and 2.59 x 1.70 respectively. They are pure white with a few faint lilac and reddish brown spots scattered over the surface. The downy young are said to be sooty slate colored with white belly. Along our coast in winter the birds eat either fish or other forms of marine life including small crustaceans.

Subfamily PHALERINÆ. Auklets, Murrelets, Guillemots.

Genus CEPPHUS Pallas.

27. *Cephus grylle* (Linn.). Black Guillemot: Sea Pigeon; Pigeon Murre.*

Plumage in summer adults: sooty black except lesser wing coverts, linings of the wings and outer half of greater wing coverts which are white; bill black; feet bright red. Adult winter plumage: wings as in summer, rest of plumage white, mixed with black above, pure white below. Immature plumage: above and below white mixed with black; white of the wing coverts mixed with black. Downy young: sooty, paler below. Wing 6.10 to 6.30; culmen 1.10; tarsus 1.30.

Geog. Dist.—Coast of northern Europe, south in winter to Denmark and the British Isles, coast of Newfoundland, breeding south to Matinicus Rock, Maine, and in winter rarely south to Connecticut and Long Island; accidental in Philadelphia.

County Records.—Cumberland; common in winter, (Lord). Franklin; accidental, (Richards). Hancock; locally common among the islands of the coast and resident, general along coast in winter, (Knight). Knox; resident, (Rackliff). Lincoln; breeding in fair numbers in 1895, (Norton). Penobscot; once taken in Brewer in winter, (Hardy); occasional in fall on ponds and lakes, (Knight). Sagadahoe; plenty in winter, (Spinney). Waldo; not rare along the coast and in Penobscot Bay from fall to spring, (Knight). Washington; resident, (Boardman).

The most western breeding place now known seems to be a colony at Matinicus Rock, from thence eastward along the coast colonies of greater or less extent nest on many of the rocky outer islands. In certain places only a pair or so of the birds breed while elsewhere even as many as 150 to 200 pairs congregate to nest. From Matinicus Rock eastward the species is resident, while to the westward it occurs from fall to spring along the coast. Inland stragglers are occasionally reported, usually after severe storms.

The Guillemot's summer home is where the surf rolls in on the rocky sea walls of our outer islands. Here small scattered groups may be seen sporting in the surf, diving for mussels and

* The Post-pliocene formations of Maine have yielded the remains of a prehistoric Murre, *Uria affinis* (Marsh) which is entitled to recognition as a prehistoric bird of this State and the only one which has written its existence in the ancient rocks of this State.

other small mollusks or feeding on surface swimming crustaceans and occasionally small fish. Those I have observed during the breeding season so engaged were very tame and unsuspicious, allowing one to approach as closely as was indeed safe for the boat on account of the rough surf. In fall when the species is found in the quieter and inner waters of the coast they are much more cautious. The nest is merely a slight hollow in the sand under a rock pile on the shore well above high tide limit. Occasionally a few mussel shells are arranged as a lining to the nest, while many eggs are laid on the bare rock, but always far back under the seawall of boulders so as to be seen and reached with some difficulty. The parent bird usually remains on the nest until removed by hand. Both sexes take turns in the work of incubation, and on incubating birds there may usually be found two bare spots in the very dense down on the breast which would seem to indicate that this is purposely removed by the birds so that the eggs may be better warmed against the flesh. This down, if so removed, never seems to be used to line the nest.

Two eggs are usually laid, sometimes only one and still more rarely three. Their color is white, sometimes with a pale greenish or bluish tinge, and they are always very handsomely spotted and blotched with brown, lilac and lavender. Many eggs are boldly wreathed with these markings about the larger end, others are spotted boldly over their entire surface, while again others show only faint suffused lilac markings. The nesting season is from about June 12 to July 4th, and the incubation period is very close to three weeks. The path used by the parents in going into the nest under the rocks may often be detected by observing the bits of feathers and down, droppings and other indications which in time make a trail quite easily followed. The young are born covered with down and remain hidden among the rocks until fairly well grown. Two eggs from Little Duck Island, taken June 20, 1896, measure 2.24 x 1.58 and 2.23 x 1.57, while two

from Spirit Ledge, June 23, 1896, measure 2.36 x 1.62 and 2.38 x 1.60. The only call I have heard uttered is a piping or whistling sound, which is uttered by the birds feeding in surf and by the young under the rocks as well as by breeding birds when removed from the nest when they also sometimes emit a slight hiss and open their bills to show a very red mouth and throat.

Subfamily ALCINÆ. Auks and Murres.

Genus *URIA* Brisson.

30. *Uria troile* (Linn.). Murre.

Plumage in summer adults: top of head and hind-neck sooty brown; general color sooty brown or black; sides, breast, belly and tips of secondaries white, the sides being somewhat streaked with black; occasional individuals (which are not well understood) have a white ring around and a white stripe behind the eye. Adult winter plumage: differs from the summer plumage only in that the chin, throat, fore-neck, sides of head and neck are white. Immature plumage: similar to adult winter plumage but with fore-neck dusky washed and mottled and with white on side of head lacking. Wing 7.70 to 8.15; culmen 1.80; tarsus 1.45; depth of bill at angle 0.55.

Geog. Dist.—Coasts and islands of the north Atlantic, breeding on the American side from the Magdalen Islands northward; in winter southward as far as Massachusetts. Formerly said to have nested on Grand Menan.

County Records.—Cumberland; rare winter visitant, an adult in high plumage which was shot off Scarboro some years ago being the only one seen and now in the Portland Natural History Society Museum, (Brown, C. B. P. p. 36). Knox; rare winter visitant, (Rackliff). Washington; (Boardman).

The Murre is most certainly a bird which is seldom observed along our coast, and it seems very likely that not more than three or four specimens have ever been actually taken. Almost every specimen so reported will on investigation turn out to be Brunnich's Murre. It should be sought for from November through March. They nest in colonies on rocky cliffs along the north Atlantic shores of both America and Europe, laying only one egg. No nest is made, the egg being laid on the bare rock on a shelf of the cliff, but the peculiar pyriform

shape of the egg prevents it from being readily rolled away to destruction, for a gust of wind or accidental shove results simply in the egg turning around on its axis. An egg from Baccalien Island, Newfoundland, taken July 3, 1897, measures 3.20 x 2.06, another from the same place 3.50 x 2.05, while a third is 3.17 x 2.14, and all these were laid on the bare rock on a cliff. The ground color of the eggs is remarkably variable, being white, light blue, dark blue, emerald green and intergrading colors, while they are either spotted, blotched, wreathed about the larger end, lined, marked or hieroglyphed with lilac, brown, umber, red, sepia and black to a wonderfully various degree of style and combination of effect, while very rarely some are unmarked. The birds sit crowded together on the cliffs by hundreds, each holding its egg between its thighs according to those who have seen them.

31. *Uria lomvia* (Linn.). Brunnich's Murre.

Plumage in summer adults: top of head and hind-neck sooty black, otherwise in plumage very similar to that of the Murre previously described. Adult and immature winter plumage similar to that of the Murre, except for difference in color of top of head and neck. Wing 7.60 to 8.50; culmen 2.00; tarsus 1.40; depth of bill at angle 0.55.

Geog. Dist.—Coast and islands of the north Atlantic and adjoining portions of the Arctic Ocean, breeding from the Gulf of St. Lawrence northward; formerly said to have bred on Grand Menan; in winter ranging southward to the Great Lakes and the coast of New Jersey.

County Records.—Cumberland; not uncommon winter visitant, (Brown, C. B. P. p. 36); two found dead in Bridgton and Otisfield respectively, (Mead). Hancock; regular winter visitor to the outer islands, (Knight). Knox; winter visitor, (Rackliff). Oxford; one shot at Norway Lake late in the fall of 1895, (Nash). Penobscot; have known of two being taken, (Knight). Piscataquis; one taken at Sebec Lake, Nov. 23, 1899, is in the collection of Sanford Ritchie, (Ritchie in letter). Sagadahoc; common in winter, (Spinney). Somerset; one found dead on the ice near Pittsfield, Dec. 31, 1896, (Morrell). Waldo; occasional in winter, (Knight). Washington; (Boardman).

Of general occurrence along the coast, especially among the outer islands from November through March, and occasionally taken inland during the same season after severe storms. The

breeding habits are very similar to those of the Murre and the eggs are to all purposes indistinguishable, showing equal variation in markings, size, etc. One taken on a shelf of rock at the Magdalen Islands, July 20, 1885, measures 3.00 x 1.99. The food consists of small fish, mollusks and surface swimming forms of marine life, obtained by surface feeding and diving at both of which the Murres are adept. The call or alarm note is reported to consist of a repetition of the syllables "murre, murre."

Genue ALCA Linnæus.

32. *Alca torda* Linn. Razor-billed Auk; Razor-bill; Tinker Murre; Turre.

Plumage in summer adults: above black, browner on fore-neck and head; breast, belly and tips of secondaries white; white line from eye to bill; bill black with white line crossing the middle. Adult winter plumage: similar but without white line between eye and bill and the under portion of head and the fore-neck white. Immature plumage: differs chiefly in bill lacking the white line crossing its middle. Downy young: beneath generally white, above brownish or brownish buff. Wing 7.90 to 8.50; culmen 1.25; tarsus 1.40.

Geog. Dist.—Coast and islands of the North Atlantic, breeding on our side from the Magdalen Islands (formerly from Grand Menan) northward; in winter south to Long Island and rarely to North Carolina.

County Records.—Cumberland; winter visitor of quite frequent occurrence, (Brown, C. B. P. p. 36). Hancock; winter bird among the outer islands, (Knight). Knox; winter visitor, (Rackliff). Sagadahoc; common in winter, (Spinney). Waldo; very rarely in winter, (Knight). Washington; winter, (Boardman).

Though this species is not positively known to have ever nested in Maine, there is a dimly verified statement that some fifty years ago or more it nested as far south as the Cranberry Islands. A few are said to have nested near Grand Menan, New Brunswick, as recently as 1897. No nest is made, the eggs being laid in crevices and fissures of rocky cliffs and on shelves of ledges along cliffs. Usually only one egg is laid, but occasionally two are deposited. An egg from Labrador,



GREAT AUK.

Skeleton and Mounted Specimen, in Thayer Museum. By kindness of Hon. John E. Thayer.

taken July 1, 1884, measures 3.17×1.96 . The eggs are somewhat less pyriform than those of the Murre, certain types of which they resemble in general appearance and markings, though generally to be distinguished from them. They are white or bluish white in color with brown and black spots and markings, chiefly near the larger end. The food is said to consist of fish, mollusks and surface swimming marine life in general.

Genus PLAUTUS Brunnich.

33. *Plautus impennis* (Linn.). Great Auk; Gare Fowl.

Plumage in adults: Chin, throat, fore-neck, and sides of head and neck dark brown; elsewhere above black; a large white patch between bill and eyes; breast and belly white. Wing 5.75; culmen 3.30; greatest depth of bill about 1.50 (Ridgway).

Geog. Dist.—Formerly coast and islands of the North Atlantic from Massachusetts and Ireland northward to the Arctic Circle; extinct during the past century.

County Records.—Hancock; formerly occurred at Gouldsboro, (R. Me. B'd. Agr. 1877, p. 261).

It is exceedingly probable that the Great Auk formerly was a winter visitor along our coast of somewhat general occurrence. Being unable to fly it migrated by swimming, being perfectly at home in the water and being said to use both feet and wings in swimming and diving, which seems very probable as the Murres and Guillemots use their wings likewise in diving. One of the favorite breeding resorts was Funk Island, off the coast of Newfoundland, and here the Auks congregated in large numbers to breed, probably only going on land for this purpose. They were exterminated at this as well as at other resorts by the fishermen who killed the birds in thousands for their feathers, flesh and fat. Being unable to fly and very clumsy on land the extermination of these birds was only a mere question of time. No living individual has been observed since 1842, and only about seventy specimens are known to be preserved, while

still fewer eggs are extant. A skin is worth about \$1,500 while an egg finds plenty of purchasers at \$900. The egg is very similar in color and markings to that of the Razor-billed Auk but much larger in size, measuring 4.69 x 2.92. Only a single egg was laid.

Subfamily ALLINÆ. Dovekies.

Genus ALLE Link.

34. *Alle alle* (Linn.). Dovekie; Sea Dove; Ice Bird.

Plumage in summer adults: above black, browner on neck and upper breast; lower breast and belly white; scapulars white streaked; secondaries white-tipped; flanks dusky streaked. Winter adult plumage: neck and upper breast white, feathers of latter dusky at base only. Immature: colors duller and bill slightly smaller and weaker. Downy young: sooty slate, paler below, (Ridgway). Wing 4.50 to 4.65; culmen 0.50; tarsus 0.65.

Geog. Dist. — Coast and islands of the North Atlantic and adjoining Arctic Oceans, breeding in far northern latitudes; in winter south on American coast to New Jersey and accidental in Pennsylvania and New Jersey.

County Records. — Cumberland; rather irregular winter visitor, (Brown, C. B. P. p. 36); one reported inland near Westbrook by Mr. Norton, and one at Cape Elizabeth by Mr. Brownson. Hancock; winter visitor down the bay, (Knight). Kennebec; one killed itself by flying against the ice at Gardiner, (Powers, J. M. O. S. 1905, p. 29). Knox; winter visitor, (Rackliff). Penobscot; occasionally taken in the vicinity of Bangor after severe winter storms, (Knight). Sagadahoc; in winter, not plenty, (Spinney). Waldo; rare winter visitor, (Knight). Washington; in winter only, (Boardman).

The Dovekie is exclusively a winter bird, occurring generally among the outer islands of the coast, though by no means common, and likely to be reported inland in almost any section of the State after severe storms. They usually occur from late November until mid March. In Arctic regions they are said to nest on shelves of rock or in crevices of rocky cliffs on islands or along shores fronting the sea. A single pale greenish blue or bluish white egg is stated to be laid which measures about 1.85 x 1.28 according to the various authorities. The food consists of surface swimming marine life and small fish.



EGG OF THE GREAT AUK.

Specimen in the Plummer Museum, Lancaster, Mass. By kindness of Hon. John E. Thayer.

Order LONGIPENNES. Long-winged Swimmers.

Family STERCORARIIDÆ. Skuas and Jaegers.

Genus STERCORARIUS Brisson.

Key to the species of STERCORARIUS.

- A. Wing more than 13.50; culmen 1.40 or more; tarsus more than 1.90; middle tail feathers not pointed. Pomarine Jaeger.
- B. Wing less than 13.50; culmen less than 1.40; tarsus less than 1.90; tail feathers pointed.
 - * Distance from end of shield on bill to tip of bill less than length of shield itself; length of tail in adults always less than 8.75. Parasitic Jaeger.
 - ** Distance from end of shield on bill to tip of bill greater than length of shield itself; length of tail in adults greater than 8.75. Long-tailed Jaeger.

36. *Stercorarius pomarinus* (Temm.). Pomarine Jaeger.

Plumage in adults: upper parts sooty slate in light phase, and dark plumbeous or sooty slate in dark phase; neck and lower parts white, tail coverts slaty in light phase, and same parts like upper parts in dark phase. Immature plumage: sooty slate more or less barred with buff below. Wing 13.50 to 15.00; culmen 1.40 to 1.80; tarsus 2.05; tail in adults 8.50 and in young 5.50.

Geog. Dist.—Summer resident of latitudes within the Arctic Circle, in winter ranging southward to Africa, Australia and nearly if not quite to South America.

County Records.—Cumberland; have received many in spring and fall, (Lord). Kennebec; one taken near Waterville is in the collection of Prof. A. L. Lane, (J. M. O. S. 1899, p. 11). Knox; have seen it in summer, (Norton). Lincoln; three seen June 23 and again June 24, 1895, (Norton). Sagadahoc; (Spinney). Washington; not common, (Boardman). York; I have a specimen from the town of York, (Norton).

Of rather general occurrence along the coast from August to late October and again in May, while it is casual through the summer, but never breeding within our limits. It winters from Long Island southward. Mr Turner says (Cf. Turner Contributions to the Natural History of Alaska, p. 122) "The Pomarine Jaeger arrives at Saint Michael's by the first week in June, or it may arrive by the 23rd of May if the season is

sufficiently advanced. This species is an inhabitant of the drier portions of the lowlands, usually solitary, though several may be seen at one time in the neighborhood. When not on the wing they may be seen sitting on an elevated tussock of grass watching for insects. They seek their food by wandering over great areas, generally the chains of lakes. Any refuse matter, small fish or wounded bird, is eagerly seized by them. When sitting on the water, the bouyancy of this bird is such that it seems to scarcely touch the surface of the water. The iris of this bird is dark brown, tarsi and toes bluish, web and soles black." Chapman says (Birds of Eastern North America, p. 65) "Except during the nesting season the Jaegers are as a rule pelagic, though they sometimes visit large bodies of water inland. They generally obtain their food by robbing Gulls and Terns, and have been named the Hawks of the sea." The nest is reported to be placed on the ground on dry elevated portions of the Arctic marshes and moors. It is a rude affair of grass and moss, in which two to four eggs are laid during late June. The eggs are pale olive green or yellowish gray colored, spotted with brown, umber or black, chiefly about the larger end. Size about 2.25 x 1.70 (Brewer).

37. *Stercorarius parasiticus* (Linn.). Parasitic Jaeger.

Plumage in adults: dark phase; dark slaty brown, slightly lighter below; light phase; above slaty fuscous; top of head and lores black; sides of head and back of neck yellowish; breast and belly white, flanks fuscous. Immature plumage: dark phase; differs from adult dark phase in that the feathers on the under parts are marked more or less with buff; light phase; while differing in other details the chief difference readily discernable is that the white under parts show more or less buffy washings and are somewhat irregularly barred with fuscous. Wing 11.80 to 13.50; culmen 1.30; tarsus 1.65; tail of adults 7.00, immature 5.50.

Geog. Dist.—Northern part of northern hemisphere, nesting in Arctic regions and wintering from New York and California to Brazil and South Africa.

County Records.—Cumberland; have received many in spring and fall, (Lord). Hancock; spring and fall visitor, (Knight). Knox; winter visitor, (Rackliff); received a female from Port Clyde in May, 1901, (Spinney). Sagadahoc; not common near shore, (Spinney). Washington; rare, (Boardman).

General off shore in September and October and again in May and June, casual only in July and August, thus appearing to occur in a similar manner to the preceding species. In the northern breeding grounds two to four eggs are laid. A set now at hand was taken from a nest of moss and grass on the ground, Myvale, North Iceland, June 12, 1892, and the eggs measure 2.52 x 1.54 and 2.43 x 1.56. The species is stated to breed in small colonies or scattered pairs on islands in ponds or lakes or on the shores. The eggs are olive green with spots of brown and black scattered over the surface but thickest at the larger ends. The Skuas and Jaegers are all very similar in their habits and are indiscriminately called Robber Gulls. A pair of these birds will pursue and harry other species of Gulls, Terns and other seafoal until the victims are forced to disgorge their stomach contents which are quickly swallowed before they touch the water. Fish and almost any kind of carrion floatsam and jetsam are eagerly eaten.

38. *Stercorarius longicaudus* Vieill. Long-tailed Jaeger.

Plumage in adults: above slaty fuscous; top of head and lores black; sides of head and back of neck yellowish; breast and belly white; flanks fuscous; to be distinguished from the Parasitic Jaeger by the difference in proportion of nasal shield mentioned in the key and by the tail which ranges from 12.00 to 15.00 in length in adults. Immature plumage: similar to that of the Parasitic Jaeger, from which examples are to be distinguished readily by difference in proportion of basal shield to bill mentioned in the key; Wing 11.50 to 13.00; culmen 1.15; tarsus 1.70.

Geog. Dist. — Northern part of northern hemisphere, nesting in Arctic regions such as Greenland, Anderson River region, etc.; in winter migrating south to the Gulf of Mexico.

County Records — Sagadahoc; not common, (Spinney). Washington; common in fall, (Boardman).

Though occurring more rarely than the two preceding species along our coast, this species occurs at practically the same time and probably under the same conditions. The nests are reported to be similarly placed to those of the Parasitic Jaeger and the eggs are described as similar in general appearance but averaging slightly smaller in size, 2.16 x 1.54 (Ridgw.).

Family LARIDÆ. Gulls and Terns.

Subfamily LARINÆ. Gulls.

Key to the species of LARINÆ.

- A. Hind toe without a nail, a mere rudimentary knob. Kittiwake.
- B. Hind toe with nail, small but well developed.
 - 1. Tail forked. Sabine's Gull.
 - 2. Tail not forked, even.
 - * Wing over 15.00 inches long.
 - a¹. Back slaty black. Black-backed Gull.
 - a². Back not slaty black.
 - b¹. Back pearl gray.
 - r. Bill over 1.95 along culmen.
 - ?. Outer primaries with some black markings. Herring Gull.
 - ?. Outer primaries not black marked. Glaucous Gull.
 - rr. Bill under 1.95 along culmen.
 - ?. Primaries uniform pale pearl gray, fading gradually into white at the tips. Iceland Gull.
 - ?. Primaries distinctly and sharply white tipped, with darker subterminal spaces, pearl gray otherwise. Kumlien's Gull. (Hypothetical List.)
 - b². Back not pearl gray, but grayish, whitish, brownish, or mottled with grayish or brownish.
 - r. Bill under 1.95 along culmen. Iceland Gull. (Im.)
 - rr. Bill over 1.95 along culmen.
 - ?. Tail white to grayish brown, sometimes with black markings. Glaucous Gull. (Im.)
 - ?. Tail black or very dark, sometimes marked with white.
 - 1. Wing over 17.50; bill at nostril over 0.70 in depth. Black-backed Gull. (Im.)
 - 11. Wing under 17.50; bill at nostril under 0.70 in depth. Herring Gull. (Im.)
 - ** Wing under 15.00 inches long.
 - a¹. Tail white, unmarked.
 - b¹. Head and throat black.
 - r. Outer primary entirely black. Laughing Gull.
 - rr. Outer primary chiefly white, sometimes dark banded or marked; always black tipped. Bonaparte's Gull.
 - b². Head white or pearl gray.
 - r. Primaries pure white. Ivory Gull. (Hypothetical List.)
 - rr. Primaries more or less black-marked. Ring-billed Gull.
 - a². Tail marked with black.
 - b¹. Tarsus under 1.50 Bonaparte's Gull. (Im.)

b². Tarsus over 1.50.

r. Wing under 13.25. Laughing Gull. (Im.)

rr. Wing over 13.25.

? Primaries white or mostly so. Ivory Gull. (Im.)
(Hypothetical List.)

?? Primaries mostly black or entirely so. Ring-billed Gull.
(Im.)

Genus *RISSA* Stephens.

40. *Rissa tridactyla* (Linn.). Kittiwake.

Plumage in summer adults: head, neck, tail and its coverts, and lower parts white; mantle gray; five outer primaries black tipped, the amount decreasing from the outer inward; bill yellowish, feet black; hind toe rudimentary, without a nail. Winter adult plumage: differs in back of head and neck being gray washed and a lead-colored suffusion before and behind the eyes. Immature plumage: back of neck and lesser wing coverts black; tail with black band at tip; otherwise much as in winter adults. Wing 12.00 to 13.00; culmen 1.40; tarsus 1.35.

Geog. Dist. Northern parts of northern hemisphere, nesting on American coast from the Magdalen Islands northward to the Arctic regions; in winter found on the Great Lakes and along the coast to Long Island and rarely to Virginia; occasional in summer on Maine coast but not breeding.

County Records.—Cumberland; common winter resident, (Brown, C. B. P. p. 34). Hancock; regular winter resident among the outer islands, (Knight). Knox; winter visitor, (Rackliff). Oxford; one in October, 1890, on Lovewell's Pond, (Nash); one shot at Kezar Pond in 1884, (Nash). Piscataquis; one shot near Piper Pond, Abbot, about August 4, 1901, (Ritchie). Sagadahoc; plenty from November to April, (Spinney). Waldo; two seen and shot near Islesboro within a few years, (Howe, J. M. O. S. 1900, p. 32); seen near Islesboro August 14, 1907, (Knight). Washington; abundant fall migrant, (Boardman). York; (Butters).

Though occasionally recorded in June and August such individuals are mere stragglers, and the species may be regularly expected only from November to April along the coast. Inland records are few and scattering and are due to the presence of mere stragglers. These birds nest in large colonies on cliffs in the Arctic regions. Two to four eggs are laid and these are of varying shades of buff or brownish gray, marked with chocolate, brown and lilac in spots, or very often wreathed about the larger end. Two eggs now before me were taken on Bristol

Cliffs, Baccalien Island, Newfoundland, July 1, 1897. They measure 2.22 x 1.69 and 2.27 x 1.61. The nest was composed of grass and a little moss and placed on a shelf of a precipitous cliff. The nest was barely large enough to hold the eggs and had seemingly been used for years. Its diameter at base was one foot, and at top eight inches; interior diameter six inches and depth two inches. The eggs were advanced in incubation. These handsome little Gulls are among the most graceful of their tribe. They feed mainly on fish, but refuse nothing of an edible nature which comes their way whether it be fresh-killed or carrion, provided that it be animal in nature. They are most numerous in Maine during the coldest and roughest winter weather and prefer the outer, stormiest localities among the islands.

Genus LARUS Linnæus.

42. *Larus glaucus* Brunn. Glaucous Gull; Burgomaster Gull.

Plumage in summer adults: primaries pearl tinted towards body; wings and back pearl gray; otherwise pure white. Adult winter plumage: differs chiefly in head and neck being streaked with brownish gray. Immature plumage: above and below more or less streaked or barred with ashy gray, white parts often ashy tinged. Wing 17.00 to 19.00; culmen 2.20 to 2.60; tarsus 2.60 to 2.96; depth of bill at angle 0.75 to 0.94 (Dwight).

Geog. Dist.—Arctic regions, breeding from Labrador northward on the American coast, and migrating south in winter to the Great Lakes and Long Island.

County Records. Cumberland; a specimen shot at Peak's Island on April 27, 1883, (Brown, C. B. P. p. 37); I had three from near Portland in the winter of 1899-1900, (Lord). Hancock; rare in winter, an adult female taken at Bucksport by me, January 27, 1898, now in collection of O. W. Knight, (Dorr). Knox; winter, (Rackliff). Washington; rare, winter only, (Boardman). York; a female was taken in Plymouth Harbor near Kittery Point by Howard P. Libby, February 14, 1891, sent to A. H. Howell and is now in the collection of L. S. Foster, (Howell).

A winter visitor along the coast from late November to as late as (exceptionally) April 27. Its breeding range on the American side is in Greenland, Labrador, Hudson Bay and

Point Barrow. The nest is said to be composed of moss, dry grass, seaweed and similar material, being placed on the ground near the shore, on rocks, small islands, even on the ice near the ocean or inland on small islands of rivers and lakes. Two or three eggs are laid which are pale olive brown, gray brown or pearl color, spotted with brown, lilac and black. An egg measures 2.99 x 2.15. During the winter along the coast an occasional solitary individual may be rarely seen, flying along with keen eye awake to detect any possibilities either in the line of food or danger. Occasionally the cry "cuk-lek" is uttered with startling vehemence. The winter diet is chiefly fish, entrails and other carrion floating along in the water, and similar animal food including star-fish and sea-urchins. In summer in their northern homes they are said likewise to manifest a great partiality for eggs and young of other sea-fowl.

43. *Larus leucopterus* Faber. Iceland Gull; White-winged Gull.

Plumage in all its stages very similar to the corresponding phases of the Glaucous Gull, but the difference in size and measurements of the two species always serves to distinguish them. Wing 15.42 to 16.55; culmen 1.50 to 1.69; tarsus 2.05 to 2.32; depth of bill at angle 0.55 to 0.67, (Dwight).

Geog. Dist.—Arctic regions, breeding in Greenland, Bering Sea, Yukon River from Anvik seaward and Arctic Europe and Asia; in winter southward, rarely as far as Long Island.

County Records.—Cumberland; occurs in Portland Harbor in winter, I received one in 1898 and three in 1899 from near Portland, (Lord). Hancock; at West Sullivan, (Brewster, B. N. O. C. 8, p. 251). Knox; in winter, (Norton). Oxford; one received from E. D. Gray which was shot at a point near Perley's Mills, Jan. 12, 1898. This bird was hovering over some holes in the ice and was an immature female, (Mead, Me. Sp., April 1898, p. 14). Washington; winter only, (Boardman).

This species occurs generally along the coast as a winter visitor from November until March or April, and while not common it is probably with us more frequently than the records indicate. They are said to breed in colonies numbering hundreds of individuals, it being stated in Hagerup's Birds of

Greenland that fully a thousand pair nest on Bird Cliff in Arsuk Fiord. A set of two eggs from Olfusa, Iceland, July 1, 1892, were fresh and were taken from a nest of seaweed and moss placed on the shelf of a lofty cliff. These eggs are clay colored with brown and black markings and measured 2.79 x 1.95 and 2.69 x 1.89. They are not different from the eggs of the Herring Gull, and very probably a large series would show the same variations in color and markings. The general habits of this bird are very similar to the Herring Gull according to Mr. Chamberlain.

47. *Larus marinus* Linn. Great Black-backed Gull; Saddle-back.

Plumage in summer adults: back and wings slaty black, some of the wing feathers white tipped; otherwise white. Winter adult plumage: differs from the summer plumage chiefly in the head and neck being streaked with darker color. Immature plumage: above dusky, feathers more or less marked or margined with buff; white under parts more or less grayish suffused and barred. Wing 17.50 to 19.00; culmen 2.45; tarsus 3.00.

Geog. Dist.—Coast and islands of the north Atlantic, south in winter on the American side to the Great Lakes, Virginia and more rarely to South Carolina; breeds from Bay of Fundy northward.

County Records.—Cumberland; common winter resident, (Brown, C. B. P., p. 34). Hancock; readily found in winter down the bay, (Knight). Knox; winter visitor, (Rackliff). Sagadahoc; few in summer, plenty in winter, (Spinney). Waldo; readily found in winter about the bay, (Knight). Washington; winter, (Boardman).

As a very generally distributed winter bird along the coast, this species may be readily found by careful watching almost anywhere coastwise from September until well into April, while a few sterile stragglers remain through the summer, Mr. Boardman has stated that a few formerly nested about Grand Menan, New Brunswick, but there seems to be no recent records of its breeding south of the Bay of Fundy. It breeds commonly on many small islands along the coast of Labrador, Norway, Scotland, etc., usually nesting from one to four pair in a place but perhaps more often by solitary pairs. The nest is composed of grass, seaweed and similar material and is quite

well constructed. The eggs are two or three in number, white to olive gray and drab in color, spotted with reddish brown, lilac and black. A selected one measures 2.85 x 2.00. The food consists of fish, offal and in the proper season the eggs and young of other seafoal. They utter a peculiar laughing "ha-ha-ha" which seems to be an alarm note, as when trying to steal unnoticed upon a flock of Ducks or other seafoal in winter I have sometimes been discovered by one of these sharp-eyed Gulls and immediately it would utter this demoniac chuckle at which the Ducks often seemed to discover me and take flight. This Gull also has a peculiar drawn out cry of "kiouw-kiouw-kiouw".

✓ 51. *Larus argentatus* Brunn. Herring Gull.

Plumage in summer adults: mantle and wings pearl gray; first six primaries generally white-tipped, followed by black markings or bands, and on outer two or three primaries this black again interrupted by white, and again by black; other parts white. Plumage in winter adults: differs from the summer plumage in that the head and neck are dusky suffused or streaked. Immature plumage: a general brownish gray, head buffy streaked; primaries brownish black; under parts brownish gray. Wing 15.50 to 18.00; culmen 2.25; tarsus 2.50.

Geog. Dist.—Old World, Cumberland Sound, North America in general, south in winter to the Azores, Cuba and Lower California; breeding from Maine, northern New York, the Great Lakes and Minnesota northward.

County Records.—Androscoggin; fairly common migrant, (Johnson). Aroostook; common on lakes and breeds, (Batchelder, B. N. O. C. 7, p. 152). Cumberland; common spring visitor near Bridgton, (Mead); resident throughout the year, (Brown, C. B. P. p. 34). Franklin; rare, accidental, (Swain). Hancock; locally common resident along the coast, breeds in large colonies on certain of the outer islands, (Knight). Kennebec; rare, (Gardiner Branch). Knox; resident, (Rackliff). Lincoln; (Norton). Oxford; found it breeding on the Richardson Lakes in the '80's, (Mead). Penobscot; seen as far up the river as Orono in spring and fall and often a few remain about the Bangor dam all winter, (Knight). Piscataquis; breeds on the lakes, (Homer). Sagadahoc; few in summer, common in winter, (Spinney). Somerset; frequent visitor spring to fall, (Morrell); observed about Rowe Pond in early July 1906 so they evidently breed not far away, (Knight). Waldo; regular visitor along the coast throughout the year, (Knight). Washington; common resident, (Boardman). York; (Butters).

As shown by the writer and others, the formerly recognized variety called the American Herring Gull was based on certain markings which proved to be assumed at proper stages of development by the birds of both countries, or in other words a large proportion of the old adult birds of North America were not different from the Herring Gull, consequently the birds of both continents are now called non-separable. Along the coast of Maine it breeds in colonies from No-Man's-Land eastward, and there is resident throughout the year, while westward of this limit it occurs as a non-breeding summer coast bird to beyond our boundary, and as a very common bird from fall to spring. Inland it occurs along many of the rivers in spring and fall, and occasionally about open water through the winter, and appears on the larger lakes soon after the ice breaks up in spring, remaining in many cases to breed. Moose-head and many other large lakes of northern and western Maine are inhabited by breeding colonies of these birds. Large colonies nest on many of the outer islands of the coast such as No-Man's-Land, Little Duck Island, Big Duck Island, Spirit Ledge, Heron Island, Big and Little Spoon Islands, Black Horse, Red Horse, and many other suitable islands.

The nests are usually placed on the ground among rocks, on shelves of cliffs and rocky slopes, but in many cases where the birds have been repeatedly disturbed the nests are placed in trees, usually on the limbs of stunted Black Spruces (*Picea nigra* Link.). The nests are composed of dry grass and seaweed, with occasionally a few scattered feathers, and the eggs are laid from early June until well into July, usually however about June 12. Two, usually three, and very rarely four or exceptionally five eggs have been found in one nest. I have on one or two occasions seen bluish white unspotted eggs but these are very exceptional and doubtless due to some disorder of the pigment glands of the bird. A majority of the eggs have a ground color ranging from bluish white through yellowish brown and olive brown, and they are more or less

spotted and blotched with lilac, brown, umber and black. Often the spots are most abundant at the larger end. Three eggs from a nest among the rocks on Black Ledge, found June 23, 1896, measure 2.97×1.98 , 3.01×2.01 , 2.93×1.95 . Four eggs from Spirit Ledge, June 26, 1895, measure 2.96×1.95 , 2.93×1.96 , 2.94×1.97 , 2.95×1.90 . These eggs had every appearance of having been laid by the same bird, and doubtless were, but in many instances nests found containing four or even only three or two eggs had no two of the same color or shape, and in such cases one might possibly infer that the eggs were laid in the same nest by different parents. Normally however three eggs of the same general shape, size and markings may be expected in a nest. When a colony of these birds is approached they rise in the air and fly overhead (out of gunshot generally) uttering a "ha-ha-ha" or a "qu-e-e-a-a-h que-e-e-a-h", the intensity of their demonstration usually depending on the contents of the nests (whether fresh eggs, incubated eggs or young are present) the amount of previous disturbance they have been subjected to, etc.

Gulls are great scavengers, eating almost anything of animal nature in the way of carrion, but their natural diet is small fish, sea urchins, star-fish and other marine life. I have seen portions of squid in a nest containing young Gulls. It is doubtless true that during the breeding season they range considerable distances for food, but it seems very improbable, as asserted by a recent author, that *breeding* birds from our Maine colonies range as far south as the coast of Massachusetts. Quite conclusive evidence is at hand to show that the individuals which range up some of our Maine rivers and inlets in the breeding season, remaining to feed all day and towards night flying seaward to return the next morning, are often sterile birds, no breeding birds having been actually captured from such flocks. Breeding birds generally have other matters to attend to besides spending their days inshore sitting idly on the rocks preening their feathers.

The Gulls are most excellent swimmers, but their diving seems to be confined to ducking their heads and the fore part of their bodies under the surface, or occasionally plunging down from the air with sufficient force to disappear under the surface. One day, during the winter of 1906, I watched several of these birds circling about the sluiceway at the Bangor dam. They flew about the open water in circles, the upper range of which was always near the mouth of the sluice, and as their keen eyes detected some fish at this upper portion of their range they plunged with force into the water, quickly rising to the surface as a usual thing, though on at least one occasion a bird was out of sight so long that I had grave fears that it would be carried under the ice by the swift current, but it finally emerged at the edge of the ice and took wing with an unusually large tom-cod. Nearly every plunge seemed to be successful, the birds usually swallowing the smaller fish before taking wing, but when a large fish was captured they would fly to the ice near by and after beating the fish from side to side on the ice would finally swallow it. In spite of the icy water and their frequent immersions, two or three of the birds finally betook themselves to a quiet pool of water and vigorously spattered the water with their feet and wings, and engaged in preening their feathers and the usual accompaniments of bird washing. At night they roosted in some evergreen trees not far away. Being unmolested these birds could be watched from not more than twenty feet away.

✓54. *Larus delawarensis* Ord. Ring-billed Gull.

Plumage in summer adults: bill yellowish with black band near tip; wings and back pearl gray; at least the first five or six primaries more or less white-tipped and with varying amounts of black toward the base; rest of plumage white. Winter adult plumage: differs in that the head and neck have grayish streaks. Immature plumage: above brownish dusky, feathers more or less (usually much) streaked and margined with grayish buff or whitish; outer primaries blackish; below white, considerably streaked and spotted with grayish; tail gray to whitish, spotted with dark, and with wide black band toward end; bill black at end, base yellow. Wing 13.50 to 15.50; culmen 1.60; tarsus 2.15.

Geog. Dist.—North America at large, wintering from Long Island to Cuba and Mexico, and breeding from Newfoundland, Minnesota and North Dakota northward.

County Records.—Cumberland; I received over 200 in the flesh in the fall of 1899, and they staid until late in the winter about Portland Harbor, (Lord); quite a common transient, (Brown, C. B. P., p. 34). Hancock; fall migrant, have one from Bucksport, (Knight). Knox; migrant, (Norton). Waldo; fall migrant, seemingly not rare in the bay at that time, (Knight). Washington; common in migration, (Boardman).

While probably most generally observed along the coast in October and November, a few may be seen through the winter, and they again occur somewhat more generally in March and April though not so many as in fall. They nest in colonies beyond our limit in their northern breeding grounds along the coast and also about many interior ponds and lakes, placing the nest usually on some island, either on the ground or on cliffs. Three eggs taken at Stump Lake, North Dakota, June 13, 1893, were in a nest of grass and weeds which was placed on the ground on an island. These eggs are olive brown, spotted and lined with black and measure 2.35×1.64 , 2.38×1.69 , 2.40×1.69 . A series of these eggs show fully as much variation in coloration as the eggs of the Herring Gull. The food in winter does not differ materially from that of the other Gulls. In the mid-west in summer they have been recorded as feeding on newly plowed land and even following the plough somewhat closely, picking up worms, grasshoppers, grubs and other insects.

58. *Larus atricilla* Linn. Laughing Gull.

Plumage in summer adults: head and throat sooty slate; back and wings pearl gray; primaries black, inner ones white tipped; throat and breast sometimes with a slight pink suffusion; otherwise white, bill red. Plumage in winter adults: top of head and ear coverts grayish streaked, otherwise as in summer. Immature plumage: above fuscous, more or less white margin to feathers; below white, more or less dusky tinged; tail grayish, black-tipped. Wing 12.50 to 13.50; culmen 1.70; tarsus 1.95.

Geog. Dist.—Breeding range extending from Texas and Florida to Maine, while its winter range extends from South Carolina to South America.

County Records.—Cumberland; quite a common summer resident, breeding on the outer islands of Casco Bay, (Brown, C. B. P., p. 34). (They have long ago ceased to breed there). Knox; summer, (Rackliff); I took an egg in the county in 1896, (Norton). Lincoln; about fourteen birds breeding in June, 1895, (Norton). Washington; a few about the islands in summer, (Boardman).

Though formerly breeding on the various islands along the coast, the status of the Laughing Gull in Maine is now somewhat changed. Mr. Norton states (Auk, 1904, p. 149) that Metinic Green Island was in June 1903, the home of the only breeding colony of Laughing Gulls known in Maine. Eight were seen at one time and three of their nests found containing eggs. It seems likely as they are now protected that their present status is similar to that in 1903. The birds nest in colonies, only a few together, in the northern part of their range (probably from necessity not from choice) but by the hundred in southern waters, placing their nests on the ground among tussocks of grass on sandy islands. The eggs are usually three but often four or five in number. They are olive brown or greenish gray in color, spotted with chocolate, brown, umber and lilac, and in fact showing a great variation in color, and markings as may be expected among the Gulls. Three eggs taken from a nest of drifted seaweed along the edge of a salt marsh, Chincoteague, Virginia, June 1, 1888, measure 2.02 x 1.53, 2.10 x 1.60, 1.99 x 1.55. The cry of the birds when excited sounds like peals of prolonged and boisterous laughter, "ha-ha-ha-ha-ha-ha-hah". The few individuals summering on the Maine coast arrive from the south in late April and are gone by September.

60. *Larus philadelphia* (Ord). Bonaparte's Gull.

Plumage in summer adults: wings and back pearl gray; head and throat sooty slate; outer three primaries white except the outer web of the first and the terminal portion of the other two which is black; other primaries pearl gray, white tipped, and the fifth and sixth with black space next the terminal white; otherwise white; feet red; bill black. Plumage in winter adults: differs as follows; head and throat white; back of head and ear

coverts grayish washed; feet flesh color. Immature plumage: primaries with more black than in adults; back brownish gray; head and neck grayish washed; tail with black band and white tips to feathers. Wing 10.00 to 11.00; culmen 1.18; tarsus 1.35.

Geog. Dist.—North America, breeding north of the United States and wintering from Maine to the Gulf of Mexico.

County Records.—Androscoggin; one at Sabattus Pond, October 23, 1898, (Farrar). Cumberland; common through winter, (Lord); abundant during migrations, (Brown, C. B. P., p. 34); not rare straggler in northern Cumberland, (Mead). Hancock; common in fall, I have seen small flocks as late as June 20 and as early as August 19 among the islands, (Knight). Knox; migrant, (Rackliff). Lincoln; observed in June, 1895, (Norton). Oxford; very rare, two shot on Lovewell's Pond in October, 1890, (Nash). Piscataquis; not uncommon migrant on the larger lakes, (Homer). Sagadahoc; plenty from November until April, (Spinney). Waldo; common in fall and not rare through the winter, a few until June, (Knight). Washington; very abundant, none breed, (Boardman).

Though appearing in fall as early as August when numbers were first seen near Sunshine, and remaining as late as June 20 when a flock of twenty or more was seen and specimens shot in Penobscot Bay, yet this species never breeds in Maine. It is common from fall to late spring along the coast, not so numerous in winter, while inland a few scattered migrants occur about the lakes in fall. In the marshes bordering the Mackenzie River this species is said to breed in late June, making a nest of sticks and grasses which is variously placed in bushes, trees or on high stumps. The eggs are said to be three or four in number, greenish olive in color, spotted with brown, umber and lilac chiefly about the larger end. The eggs are said to measure 1.97 x 1.40 (B. B. & R.). These graceful little birds usually are seen in small rather compact flocks, flying in short circular sweeps and proceeding at the same time along in the same general direction they happen to be going. When anything is discovered they reach the water by a graceful turn and either take wing with their prey without hardly pausing, or if abundance of food is found they will settle to enjoy it. Small fish and surface swimming crustaceans appear to be the chief food along our coast. When one individual of a flock is

wounded the others immediately return and hover over the spot for some time, repeatedly sweeping downward towards their injured companion on the water.

Genus XEMA Leach.

62. *Xema sabinii* (Sab.). Sabine's Gull.

Plumage in summer adults: tail slightly forked; head and neck plumbeous; black collar at back of neck; first primary black with inner half of inner web white; other primaries black, second to fourth white tipped; bill black, yellow tipped; back and wings bluish gray; otherwise white. Plumage in winter adults: ear coverts, top of head and nape dusky plumbeous; head and neck white; otherwise similar to summer plumage. Immature plumage: below, and forehead and lores white; above ashy brown, some feathers white tipped; tail white with black tip. Wing 10.00 to 11.00; culmen 0.98; tarsus 1.28.

Geog. Dist.—Arctic regions, rarely migrating as far southward as the Great Lakes and Great Salt Lake; very rare on coast of Maine and casual in Kansas, Bahama Island and coast of Peru.

County Records.—Cumberland; one taken in Scarborough, May 31, 1877, (Smith, F. & S. 20, p. 205), (B. N. O. C. 3, p. 195); an immature female shot at Brothers Island, near Portland, September 22, 1899, was seen at John Lord's where it was being mounted, (Knight, J. M. O. S. 1900, p. 2). These are our only *good* records.

In its southward migration this species rarely reaches our boundaries. Mr. Boardman took a specimen on Indian Island, *New Brunswick*, in May 1878, which has been persistently and erroneously cited as a Maine specimen by several writers in spite of corrections. On the shores of the Arctic Ocean, especially on the islands and in the marshes near St. Michael's, Alaska, the nests of grass and moss are placed on the ground. The eggs are said to be two or three in number, deep olive in color and spotted with brown. According to Ridgway they measure 1.78 x 1.26. It is probable that if more eggs were known in collections that they would show full as much variation in color and markings as the eggs of the other Gulls. The food consists of small fish and, according to Mr. Nelson of worms and aquatic insects.

Subfamily. STERNINÆ. Terns.

Key to the species of STERNINÆ.

- A. Wing over 14.00. Caspian Tern.
- B. Wing under 14.00.
 - 1. Wing under 9.00.
 - a¹. Wing over 7.80 and whole top of head black. Black Tern.
 - a². Wing under 7.80 and forehead white. Least Tern.
 - 2. Wing over 9.00.
 - a¹. Top of head entirely black.
 - b¹. Bill black.
 - r. Feet very dark or black. Gull-billed Tern.
 - rr. Feet orange or yellowish. Roseate Tern.
 - b². Bill not black, mostly reddish, yellowish or brownish.
 - r. Bill distinctly black-tipped, tarsus over 0.65. Common Tern.
 - rr. Bill not distinctly black-tipped, tarsus under 0.65. Arctic Tern.
 - a². Top of head not entirely black, some white or grayish on forehead or crown.
 - b¹. Lores entirely black; forehead white and crown jet black. Sooty Tern.
 - b². Lores not entirely black; forehead or crown white or grayish, never jet black, but sometimes speckled with black.
 - c¹. Wing black or very dark. Sooty Tern. (Im.)
 - c². Wing pearl gray.
 - d¹. Outer tail feather pure white. Roseate Tern. (Im.)
 - d². Outer tail feather not pure white.
 - Tarsus not more than 0.65. Arctic Tern. (Im.)
 - Tarsus more than 0.65. Common Tern. (Im.)

Genus GELOCHELIDON Brehm.

63. *Gelochelidon nilotica* (Hasselq.). Gull-billed Tern; Marsh Tern.

Plumage in summer adults: top of head, bill and feet black; under parts and tail white; middle tail feathers grayish; wings and back pale pearl gray. Plumage in winter adults: differs in that the head and neck are white; hind neck and ear coverts grayish. Immature plumage: similar to winter adults but upper parts buffy washed and sometimes dusky streaked. Wing 11.60 to 12.30; culmen 1.40; depth of bill at base 0.48.

Geog. Dist.—Nearly cosmopolitan; in North America chiefly along the Atlantic and Gulf coasts, breeding north to southern New Jersey, and occasionally straggling north to Washington County, Maine; in winter coast of Mexico south to Brazil.

County Records.—Cumberland; three taken in September, 1868, and individuals seen also on May 21, 1881, (Smith, F. & S. 20, p. 204). Washington; accidental, (Boardman).

Though this species formerly straggled along the coast of Maine there appear to be no recent records of its occurrence. There seems to be no reason to suppose that it ever nested in Maine, but rather that the individuals occurring here were illustrations of that northern migration of birds inhabiting a more southern area which often occurs without seeming reason, and which results in scattered individuals or flocks wandering far north of their normal range. In their southern breeding grounds they nest in colonies, often associated with other sea-fowl, on various grassy islands along the coast, laying three or four eggs in depressions in the sand or among the short grass. These eggs vary in color from very light yellowish buff to greenish buff, spotted with lilac, brown and umber. Three taken from a nest on the salt marshes, Cobb's Island, Virginia, July 4, 1882, measure 1.80 x 1.26, 1.85 x 1.26, 1.86 x 1.26. They have been reported to prefer insects which were caught while on the wing to fish but they also eat fish and surface swimming marine life.

Genus STERNA Linnæus.

Subgenus THALASSEUS Boie.

64. *Sterna caspia* Pallas. Caspian Tern; Imperial Tern.

Plumage in spring adults: top of head and nape glossy black; upper parts pale pearl gray; otherwise white; bill red, dusky at tip; feet black. Plumage in summer, fall and winter adults: white on top of head intermixed with black, otherwise as in spring. Immature plumage: above pale grayish, spotted with dusky; top of head streaked with black and white; tail feathers with dusky subterminal spots; primaries slaty; otherwise white; bill brownish black. Wing 15.00 to 17.00; culmen 2.75; tarsus 1.75; depth of bill at base 0.85.

Geog. Dist.—Irregularly distributed throughout the world; in North America breeding locally south to Virginia, Texas, Nevada, Michigan, California, Pelican Island in the Gulf of Mexico but chiefly breeding northward in Arctic regions to Great Slave Lake; winters south of the United States.

County Records.—Cumberland; a bird of the year taken at Richmond's Island in 1895 and now in the Portland Society collection, (Norton, P. P. S. N. H., April 1, 1897, p. 104); one taken at Clapboard Island, Casco Bay, May 11, 1901, and mounted for the Bowdoin College collection, (Lord); one in the collection of J. A. Coolbroth which was taken several years ago near Richmond's Island and was in full nuptial plumage, (Norton, J. M. O. S., 1905, p. 57). Knox; very rare, (Rackliff). Sagadahoc; August and September, not plenty, (Spinney). Washington; seen in migration, rare, (Boardman).

This species is not known to breed in New England, though nesting both south and north of our limits. It occurs as a rare spring and fall migrant along the coast. The birds nest in colonies either on islands in lakes or along coasts. A set of three eggs taken at Gravel Gull Island, Green Bay Wisconsin, May 29, 1892, was in a mere hollow in the sand and gravel. These eggs are ashy gray, spotted with dark brown and black and measure 2.28 x 1.72, 2.37 x 1.75. Two or three eggs are usually laid and these are described in the manuals as being grayish white in color with rather faint obscure chocolate markings which is rather different from the set in my possession and other authentic sets I have examined. This species is the largest of the Terns and their food consists of small fish and surface swimming water life in general.

Subgenus STERNA Linnæus.

70. *Sterna hirundo* Linn. Common Tern; Wilson's Tern; Mackerel Gull; Medrick; Sea Swallow; Red-shank; Summer Gull.

Plumage in summer adults: top of head pure black; throat white; breast and belly pale pearl gray; back and wings pearl gray; tail white with outer webs of outer feathers pearl gray; inner border of inner web of outer primaries white; bill black at end, red at base; feet orange red. Adult winter plumage: front of head and under parts white; bill and feet duller red. Immature plumage: crown mixed black and grayish white, back

washed with light brownish; distinct bar of dusky across wing at lesser coverts; bill dark brown or blackish, slightly red only at base. Downy young: grayish buff, mixed with dusky above, below white, more or less buff tinged. Wing 10.00 to 12.00; culmen 1.35; tarsus 0.66 to 0.88.

Geog. Dist.—Greater part of northern hemisphere and Africa; breeds locally both on the coast and in the interior of North America from Florida, Texas and Arizona north to the Arctic coast; winters from Virginia southward.

County Records,—Androscoggin; rare migrant, (Johnson). Cumberland; about 1,000 pair breed at Bluff Island, Casco Bay, Norton, Auk 1904, p. 163). Franklin; migrant, (Richards). Hancock; common local summer resident, breeding on many suitable islands of the coast, (Knight). Knox; common in 1899 at the Fox Islands, (Howe, J. M. O. S. 1900, p. 28). Lincoln; still quite common and breeding in 1895, (Norton). Oxford; very rare, (Nash). Penobscot; local about some of the larger lakes in the spring, (Knight). Sagadahoc; breeds, (Spinney). Waldo; common spring to fall in Penobscot Bay, (Knight). Washington; abundant, (Boardman). York; (Butters).

The first individuals arrive from the south in May, usually about the middle to the last of the month, and remain exceptionally until the very last of September, but the bulk have gone by the middle of the month. They nest in colonies of several dozen to many hundred pair on suitable grassy islands along the coast, being associated with the Arctic Terns at many of their breeding grounds. The habits of the two species, the size and color of the eggs, localities selected, etc., are so very nearly identical that one thorough description of their habits will do very well indeed for both species. Their favorite breeding grounds on the Maine coast are at Metinic Green Islands, Machias Seal Island, Bluff Island and Matinicus Rock at each of which places the number of breeding birds is probably well up in the thousands. Other minor breeding places are Two Bush, Saddleback Ledge, Halibut Ledge, Ship, Barge, Trumpet, and Green Islands in Penobscot Bay in which places several dozen pair usually congregate on each. At the approach of visitors the Terns may be observed sitting quietly on the islands, either on their nests or perched on the rocks along the shore, or leisurely flying over the water engaged in feeding. They fly with head turned so the bill slopes downward.

As the visitors approach nearer the alarm begins to spread, a few individuals fly into the air and circle around uttering leisurely a few calls of "chir-r-r-r chir-r-r," but gradually the tumult spreads and increases until finally all the inmates of the colony present are on the wing uttering each in its most intense voice "chir-r-r-rchir-r-r-r chir-r-r-r" varied by "tear-r-r-r tear-r-r-r-r", flying in circles over head and now and then swooping downward, this swooping being seemingly done by individuals whose homes are most nearly threatened by the now landed visitors. If one of the Terns be shot the others fly lower and hover over their comrade so that in this manner the plume hunters formerly were able to kill large numbers of the birds.

When unaware that intruders are present it is a pleasure to watch a Tern sitting quietly on its nest, occasionally dabbling the sand with its bill or preening its feathers. Now sleepily closing its eyes in a very satisfied manner, then opening its bill in a very leisurely gape, then quickly turning its head to ascertain the cause of some unwonted sound which may possibly have been incautiously made by the concealed watcher of its habits. Two birds (probably an engaged or already married couple) are engaged in billing and fondling one another in a manner which seems quite foreign to such birds as the Terns ordinarily appear to be. Presently one of the billing birds does a little excavating in the sand with its feet and bill, seemingly forming the beginning of a nest, then suddenly both are off in a wild game of tag, one after the other, not again to return, in the short time the place was watched.

The nest is usually a mere hollow in the sand or among the short grass, though occasionally a well constructed nest of grass is found which will retain its shape when lifted. The usual number of eggs is three, though sets of four, five and exceptionally six eggs have been found which resembled each other in each case sufficiently well to have been the product of the same bird. Occasionally when repeatedly robbed the number of eggs laid late in the season is only two. The eggs

are very variable, being olive brown, olive gray, whitish or buff and marked, blotched or very often wreathed with brown, black, lilac and chocolate. From June 10 to the end of the month is the usual time for deposition of eggs but in cases where the birds have been disturbed fresh eggs have been found as late as August 19. Three eggs from Ship Island, Penobscot Bay, June 19, 1896, measure 1.62 x 1.20, 1.59 x 1.20, 1.60 x 1.17. Their food consists of small fish in the main part which they catch by swooping down into the water and greedily devouring them. I have seen a Tern pursue a *Papilio turnus* (our common yellow swallow-tail butterfly) for a considerable distance, finally catching it and devouring it with seemingly a great relish, so it seems apparent that they do eat insect food.

71. *Sterna paradisæa* Brunn. Arctic Tern.

Plumage in summer adults: similar to that of the Common Tern from which it chiefly differs as follows: tail longer and somewhat deeper cleft apparently; less gray on shaft part of inner web of outer primaries; bill shorter and without black tip; tarsus shorter. In immature and winter plumages the best means of distinction are the measurements of the tarsus. Wing 10.00 to 11.00; culmen 1.28; tarsus 0.55 to 0.65.

Geog. Dist.—Northern hemisphere, breeding in North America from Massachusetts far northward and wintering from Virginia and California southward.

County Records.—Cumberland; summer resident, (Brown, C. B, P., p. 34). Hancock; summer resident, locally present in limited numbers in breeding colonies with the Common Tern, but not always found in every such colony, among the outer islands, (Knight). Knox; common in 1899 at the Fox Islands, (Howe, J. M. O. S. 1900, p. 28). Lincoln; still quite common and breeding in 1895, (Norton). Piscataquis; migrant about the lakes, (Homer). Sagadahoc; breeds, (Spinney). Washington; abundant, (Boardman).

Metinic Green, Machias Seal Islands and Matinicus Rock are probably the chief breeding grounds of this species along our coast, its associates being large numbers of Common Terns. A few also breed among their allies in the Penobscot Bay colonies. Their migration and nesting habits are almost identical with their associated relatives. Three eggs taken at St. George, June 28, 1890, from a slight depression in the sand measure 1.61 x 1.15, 1.70 x 1.18, 1.57 x 1.18.

72. *Sterna dougalli* Montag. Roseate Tern.

Plumage in summer adults: tail pure white, absolutely no gray on outer feathers which is an absolute means of distinction from the two preceding species; bill black with reddish base; feet red; top of head black; back and wings pearl gray; below a very delicate pink which readily fades into white in dried skins; outer webs of primaries black. Plumage in winter adults: differs in that front of head is white streaked with black and the under parts white. Immature plumage: crown and nape buffy grayish streaked with darker; orbital and auricular regions dusky blackish; back and scapulars pale pearl gray with buffy tints here and there and mottled with dusky, each feather having a submarginal U-shaped mark; tail feathers with outer webs often dark grayish and dusky marked near their ends. Wing 9.00 to 10.00; culmen 1.48; tarsus 0.85.

Geog. Dist.—Temperate and tropical regions, breeding on the Atlantic coast of North America north to Massachusetts only and in addition on Sable Island, Nova Scotia; wintering south of the United States.

County Records.—Seen at Green Islands, Casco Bay, (Brewster, B. N. O. C. 4, p. 15). Knox; formerly in summer, now exterminated, (Norton); a few seen at Fox Islands in 1899, identification not absolute, (Howe, J. M. O. S. 1900, p. 28). Waldo; three seen August 31, 1900, near Islesboro by G. C. Shattuck, (Howe, J. M. O. S. 1901, p. 14).

While it is probable that this species once nested in limited numbers along the Maine coast, there is no evidence at hand that they may at present be called breeding birds. Their status is better expressed as rare visitors along the coast from spring to fall. Their habits are not very different from those of the two preceding species with which they are often associated. The eggs are very similar but a series average lighter in color, the eggs are rather less pointed at the smaller end, the markings somewhat finer, but in most cases it would be quite difficult to distinguish their eggs with certainty unless aided by other data. A set of three taken at Egg Island, Buzzard Bay, Mass., July 12, 1897, from a slight depression in the ground and hidden under wild pea vines, measure 1.53×1.09 , 1.54×1.10 , 1.54×1.09 . Another set from the same place measure 1.57×1.16 , 1.52×1.17 , 1.57×1.18 . On this island the Roseate Terns are said to nest exclusively on the upland parts of the island, hiding their eggs under the wild pea vines, while the Common Terns are few in number and

nest openly along the shores. Its note is said to be a harsh "cack" which is quite different from the calls of its near relatives. Dr. Dwight records it as breeding sparingly on Sable Island, Nova Scotia, which is its northern limit.

Subgenus STERNULA Boie.

74. *Sterna antillarum* (Less.). Least Tern; Little Striker.

Plumage in summer adults: pale gray above; forehead, stripe each side of crown back of and above eyes, and lower parts white; rest of head, back neck and stripe from bill to eyes black; bill yellow, black-tipped; feet orange yellow; outer web of outer primaries black. Plumage in winter adults: bill dark or black; lores, forehead and crown white, spotted with black; back of head black. Immature plumage: more or less mottled with buffy and blackish above; scapulars and lesser wing coverts with submarginal U-shaped dusky marks. Wing 6.50 to 6.90; culmen 1.15; tarsus 0.62.

Geog. Dist.—Northern South America northward to California, Dakota, and rarely to Maine and even Labrador; on the Atlantic coast rarely breeding as far north as Massachusetts.

County Records.—Cumberland; formerly occurred every year at Green Islands, but none seen for a number of years, (Brown, C. B. P., p. 35).

Though reported as formerly occurring near Portland by Mr. Brown, and given by Mr. Boardman as accidental at Grand Menan, *New Brunswick*, there seem to be no records of its occurrence within the past fifteen to twenty years, and should it occur in the future it would be as a mere straggler. These handsome little birds nest in colonies, laying their eggs on the bare sand of sea beaches in late May or June, two to four but oftenest three eggs being the complement. These eggs are buffy white to pale bluish white in color, spotted with lilac, brown, chocolate and umber. A set of three from Tyhu Island, Georgia, June 22, 1891, measure 1.19 x 0.90, 1.16 x 0.89, 1.22 x 0.94. These eggs were laid on the beach. Colonies of several dozen pair of these little birds nest on the beach at Redondo, California, and also near Pacific Beach. A nest found at Redondo, June 5, 1897, was a mere depression in the sand and the eggs measure 1.14 x 0.97, 1.21 x 0.88, 1.19 x 0.88.

Here the birds could be observed lightly skimming over the surface of the water and feeding on the various small surface swimming crustaceans and small fish, or engaged in feeding on various species of beach insects.

Subgenus HALIPLANA Wagler.

75. *Sterna fuliginosa* Gmel. Sooty Tern.

Plumage in summer adults: head black with white forehead and line to eye; upper parts brownish black; outer tail feathers with some white, others brownish black; below white; bill and feet black. Immature plumage: sooty brown; wing lining and under tail coverts whitish; scapulars, wing and upper tail coverts and tail feathers distinctly white tipped. Wing 11.50 to 12.25; culmen 1.78; tarsus 1.02.

Geog. Dist.—Tropical and subtropical regions, breeding in the Bahama Islands and rarely ranging north to North Carolina; south to Chili and western Mexico; accidental in Maine.

County Records.—Piscataquis; a specimen was taken at Parkman, October 5, 1878, seems to be the only New England record, (Deane, B. N. O. C. 5, p. 64).

The occurrence of this species in Maine is purely as a straggler. It is known to breed abundantly in colonies on small islands off St. Helena, the Bahamas and on Ascension Island. Usually only one egg is laid and out of thousands of nests examined of late years there seem to be only two instances recorded of two eggs being found in a nest. Audubon states that three eggs were laid but there is good reason to believe that he was off on this as well as on many other points. In some cases the egg is laid on the bare sand or on rocks, while in other instances a slight nest is made in the grass. The eggs are creamy or buffy white, spotted with chocolate and lilac. An egg from Key Verde, May 28, 1891, measures 2.03 x 1.39. Another from Ship Channel Key, Bahamas, May 21, 1899, measures 2.00 x 1.41. In some localities the eggs are regularly gathered and eaten and form quite an important article of commerce. Davie states that the species is said to be semi-nocturnal in its habits, being able to fly by night as well as by day and going to feed long before daylight.

Genus HYDROCHELIDON Boie.

77. *Hydrochelidon nigra surinamensis* (Gmel.). Black Tern.

Plumage in summer adults: lower tail coverts white; back, wings and tail slate color; otherwise black; bill and feet black. Plumage in winter adults: head, neck and lower parts white; back, wings and tail deep gray; back of head black with some white. Immature plumage: washed with brownish above and with grayish on sides, otherwise similar. Wing 8.28; culmen 1.05.

Geog. Dist.—Temperate and tropical North America, breeding from the Middle States west of the Alleghany Mountains north to Alaska and the Fur Countries; found as far south as Brazil and Chili; casual on the Atlantic coast north to Maine and Prince Edward Island.

County Records.—Cumberland; transient in autumn, uncommon, (Brown, C. B. P. p. 35); two secured at Scarboro, August 28, 1897, they had been feeding on insects, (Norton, Me., Sp. Oct., 1897, p. 8); I received three taken near Portland in 1902, (Lord). Hancock; one seen near Castine August 14, 1901, by G. C. Shattuck, (Howe, J. M. O. S. 1902, p. 18). York; occurs at Wells Beach, (Brown, B. N. O. C. 7, p. 190).

Though occasionally taken along the coast this species is only a mere straggler to Maine and also to Grand Menan, *New Brunswick*. where Mr. Boardman reports it as accidental. The nesting places about many of the ponds and marshes of the Middle States are occupied by colonies of these birds. The eggs vary from gray buff to olive brown, sometimes greenish tinged, and are heavily spotted with chocolate and black and often heavily wreathed with the same about the larger end. A set taken at Luna Lake, Michigan, June 12, 1896, from a floating nest of partly decayed grass, consists of three eggs measuring 1.34×0.94 , 1.30×0.96 , 1.28×0.95 . Another set from same place and date measure 1.36×0.93 , 1.37×0.93 , 1.31×0.90 . Another nest from Hennepin, Minnesota, was floating in three feet of water and was a mass of decayed vegetable matter on top of which was a slight hollow in which the eggs were laid. These were fresh June 1, 1895 and measure 1.27×0.98 , 1.25×0.93 , 1.21×0.96 . The nests are usually made on floating bogs, old muskrat houses and similar masses of vegetation in bogs and marshes. Insects form a large part of the diet of

the birds and are usually caught on the wing. The birds are said to fly about in a zig-zag manner over the surface of the water catching their prey and doubtless also feed some on the aquatic insects swimming near the surface.

Family RYNCHOPODIDÆ. Skimmers.

Genus RYNCHOPS Linnæus.

80. *Rynchops nigra* Linn. Black Skimmer; Scissor-bill; Razor-bill; Cut-water; Shear-water; Sea-crow; Sea-dog.

Plumage in summer adults: black above and on wings; forehead, sides of head, outer tail feathers, tips of secondaries, inner primaries and below white; inner tail feathers brownish; basal portion of bill red, end black; feet red. Plumage in winter adults: white collar across back of neck; more brownish color above; otherwise similar. Immature: above buff with central black to many of the feathers; below white. Wing 14.70 to 15.50; culmen 2.70; lower mandible 3.00 to 4.00.

Geog. Dist.—Coasts of warmer part of America, breeding north to New Jersey and occasionally straggling north to the Bay of Fundy.

County Records.—Knox; observed at Matinicus, (Smith, F. & S. 20, p. 205). Washington; accidental, (Boardman). York; taken at Wells Bay, (Smith, l. c.).

There are no records of this species having been taken in Maine for many years. Along parts of the Virginia and Florida coasts, and bordering the Gulf of Mexico they nest in large colonies, depositing three to five eggs in hollows in the sand during the month of June. The eggs are indeed very handsome, being white or pale buffy white, heavily spotted and boldly blotched with black, umber, lilac and brown. Five eggs, taken from a slight hollow in a ridge composed of shells cast by the sea, back of the beach at Shell Island, Louisiana, June 12, 1896, measure 1.80 x 1.31 1.69, x 1.31, 1.71 x 1.31, 1.69 x 1.29, 1.79 x 1.35. Thousands of birds were said to nest in this colony. The birds feed by skimming along the surface of the water, their prolonged lower mandible grazing the surface and scooping up various surface swimming crustaceans and other small marine life. The cry of this species has been compared to the barking of a dog.

Order TUBINARES. Tube-nosed Swimmers.

Family PROCELLARIIDÆ. Fulmars, Shearwaters and Petrels.

A. Wing over 8.00.

1. Under parts not white.

a¹. Upper parts sooty black; under parts gray: partition between nostrils fully as wide as nostrils and ending flush with nasal tubes at their front end. Sooty Shearwater.

a². Entire plumage uniform dark slaty gray; nasal partition thin and ending decidedly within the nasal tubes. Fulmar, dark phase. (See Hypothetical List.)

2. Under parts white.

a¹. Head white. Fulmar, light phase. (Hypothetical List.)

a². Head not white.

b¹. Rump, upper tail coverts, greater part of scapulars, secondaries and basal two-thirds of tail white. Pintado Petrel.

b². Fuscous above; longer upper tail coverts merely white tipped; wings and tail dark fuscous. Greater Shearwater.

B. Wing under 8.00.

1. Tail forked. Leach's Petrel.

2. Tail not forked.

a¹. Upper tail coverts black tipped; webs of feet without yellow marks. Stormy Petrel. (Hypothetical List.)

a². Upper tail coverts not black tipped; webs of feet with yellow marks. Wilson's Petrel.

Subfamily PUFFINÆ. Shearwaters.

Genus PUFFINUS Brisson.

89. *Puffinus gravis* (O'Reilly). Greater Shearwater; Hagdon.

Plumage: above grayish brown; back feathers with paler tips; longer upper tail coverts whitish tipped; belly smoky gray; flanks and lower tail coverts grayish brown; other under parts white; white throat abruptly contrasted with dusky sides and top of head and sides of neck. Wing 12.00 to 13.00; culmen 1.82; tarsus 2.15.

Geog. Dist. — Atlantic Ocean from Cape Horn to Arctic regions; ocean wanderer whose breeding range is unknown.

County Records — Cumberland; said to be rather common by fishermen, (Brown, C. B. P. p. 35). Waldo; seen near Islesboro, Aug. 10, 1901, by Dr. J. C. White, (Howe, J. M. O. S. 1902, p. 18). Washington; common at sea, (Boardman).

The Shearwaters are birds of the open sea and are especially common among the fishing fleet at the banks. Only rarely are they seen near our coast. The breeding habits of this species are unknown, and the identification of the egg described by Dr. Brewer from South Greenland is in my opinion more than doubtful. The birds are said to congregate about fishing vessels and feed on almost any kind of guts and offal which may be thrown overboard, but their natural diet is doubtless fish.

94. *Puffinus fuliginosus* Strickland. Sooty Shearwater; Black Hagdon.

Plumage: below uniform sooty gray; above sooty brownish black; under wing coverts gray, mottled with white and gray; bill dark. Wing 11.00 to 12.00; culmen 1.68; tarsus 2.10.

Geog. Dist.—Atlantic Ocean, appearing as a summer visitor on the American coast from South Carolina northward; breeding range open to doubt.

County Records—Cumberland; rarely seen except long distances from land, there seemingly common, (Brown, C. B. P. p. 35). Sagadahoc; one caught in a trawl about six miles from Seguin Island, May 1901, now in my collection, (Spinney). Washington; rare at sea, (Boardman).

Like the preceding species a bird of the fishing banks, where it is reported as common in summer. The nest and eggs would seem either rare or unknown. The A. O. U. Check-list p. 33, says "Breeding in southern hemisphere". Chapman says "Nest and eggs unknown". Ridgway does not describe the eggs. The fifth edition of Davie's Nests and Eggs of N. A. Birds states that "It breeds in immense colonies on the islands of the sea in the far north. It burrows in the ground to the extent of several feet and deposits a single white egg. The average size of the egg is 2.58 x 1.78." The author does not vouch for any of these statements, the reader may take his choice.

Subfamily FULMARINÆ.

Genus DAPTION Stephens.

102. *Daption capensis* (Linn.). Pintado Petrel; Cape Pigeon; Damier.

Plumage: above chiefly plumbeous except as noted hereafter; rump, upper tail coverts, basal two-thirds of tail, most of scapulars and secondaries and

lower parts white; chin and throat sooty plumbeous; back, rump and upper tail coverts marked with triangular spots of sooty plumbeous; bill black. Wing 10.00 to 11.00; culmen 1.20.

Geog. Dist. — Oceans of southern hemisphere, especially about Cape Horn and north to 25° latitude; accidental on coast of California, England and in Maine; breeding range unknown.

County Records — Franklin; a specimen was shot at Lake Mooseluckmeuntic in September 1872, by Mr. C. F. Nason, and is now in the collection of the Worcester Natural History Society, Worcester, Mass., being the same bird recorded from Harpswell (erroneously it seems) in Stearn's New England Bird Life, p. 387. For full discussion of this by Mr. H. A. Purdie see List of Birds of Maine, p. 23 et seq.

Little is known regarding the nesting and habits of this species.

Subfamily PROCELLARINÆ. Petrels.

Genus OCEANODROMA Reichenbach.

106. *Oceanodroma leucorhoa* (Vieill.). Leach's Petrel; Carey Chicken.

Plumage: tail forked; white patch on upper tail coverts; whole color uniform sooty, darker above and slightly browner below; feet entirely black; wing 6.00 to 6.20; culmen 0.60; tarsus 0.90; tail 3.75 forked for a distance of at least 0.80 or more.

Geog. Dist. — North Atlantic and North Pacific Oceans, south on the American coast to Virginia and California; breeds from Maine, the Hebrides, Aleutian and Copper Islands northward.

County Records — Androscoggin; one taken at Lake Auburn and in the collection of Prof. J. Y. Stanton, (Stanton in letter); one from Sebattus pond, fall of 1900, (Lord). Cumberland; recorded by Brown (B. N. O. C. 2, p. 28) as breeding on Green Islands, Casco Bay, but recent visitors say that the birds have now deserted the island. Hancock; nests on many of the very outer grassy islands in colonies, (Knight). Kennebec; one shot on the Kennebec River at Hallowell, Oct. 9, 1897, by Edward Stickney, (Me. Sp. Sept. 1898, p. 14). Knox; breeds on a few of the outer islands, (Knight). Lincoln; a few breed, (Norton). Oxford; one shot on Lake Pennesseewassee, Oct. 21, 1896, by Will Gary, (Oxford Co. Advertiser Oct. 22.) Penobscot; accidental, four specimens have been taken to my knowledge after storms, (Knight). Sagadahoc; common July and August, (Spinney). Waldo; occasional summer visitor to coast, (Knight). Washington; common, breeds on the islands, (Boardman).

While of common and general local distribution along the entire outer coast from spring to fall, it is somewhat doubtful if this species now breeds westward of the outer islands of Lincoln County. A few stray specimens are reported in winter, but at this season a majority are wandering in distant oceans. Big colonies still nest on Duck Islands, Seal Island and Spoon Islands, usually laying about June 15, though fresh eggs may be found until the middle of July. Only one egg is laid during the season, unless possibly when the bird has been previously robbed a second egg may sometimes be deposited. The birds both assist in excavating the burrow in the soft earth, and this is from one to three feet long, extending downward, then usually slightly upward, then along a few inches beneath the surface until it enlarges into a roundish chamber where the egg is laid in a slight nest of grass, rootlets or other vegetable material of similar nature. One of the parent birds is almost invariably present on the nest after the egg is laid, and generally only one, but before the egg has been laid both parent birds are very often present. Judging by carefully sought evidence the male bird seems to predominate in numbers among the incubating birds present on the nests during the day time, but some females are also present.

When taken from the burrows in the daytime the birds appear dazed and stagger about in a half drunken fashion, thrusting their heads into the nearest holes, ostrich fashion, or flapping along and blundering into every possible obstacle. Perhaps finally they may be able to arise into the air and head seaward as they will almost invariably do when tossed upward. The chief cry they utter when one is walking over spots honey-combed with burrows which are occupied by sleeping Petrels sounds very much like "Got any terbacker" or "Jonny get your hair cut". During the day time the breeding places seem deserted by the birds except for the evidence given forth from the burrows. At the approach of night the mates of the incubating birds return from out at sea and relieve their

incubating mates which in turn go out to feed, and all this is accompanied by voluble requests "for terbacker" etc. It is indeed a strange experience to spend the early evening in a Petrel colony, having birds either already on wing or trying to get on wing bump into you from time to time, uttering weird cries, as they circle by.

Some eggs are pure white while others are finely dotted with purple, red and lilac, the markings in many instances forming a perfect wreath about the larger end of the egg. An egg from Green Island, Penobscot Bay, June 20, 1896, measures 1.34×0.97 . Another from the same place measures 1.31×0.99 while one from Seal Island, July 5, 1893, measures 0.99×0.78 . This latter is unusually small. On the least provocation by handling them the birds spit a quantity of clear, musky smelling oil from their mouth or nostrils or both, and the odor of this persists for a long time on everything it touches. Their food is gleaned from the surface, the birds often walking on the water with flapping wings while feeding. Their usual stomach contents are small crustaceans and surface forms of marine life, but they greedily feed on fish cleanings and offal thrown over from vessels. While I know nothing concerning the incubation period except that it must be somewhat prolonged, I am able to say that I have failed to find young in any nests examined as late as July 15 in one instance, and as eggs may be found as early as June 15 we have some indication that incubation is apt to be prolonged.

Subfamily OCEANITINÆ.

Genus OCEANITES Keyserling and Blasius.

109. *Oceanites oceanicus* (Kuhl). Wilson's Petrel.

Plumage: longer upper tail coverts white; wing coverts grayish, margined with lighter; bill and feet black; webs of feet with yellow; general color sooty black somewhat lighter beneath. Wing 5.70 to 6.25; culmen 0.50; tarsus 1.32; tail 3.00.

Geog. Dist.—Atlantic Ocean, breeding in southern latitudes such as Kerguelen Island, migrating northward in the summer season north of the equator; cosmopolitan.

County Records. — Cumberland; appears uncommon, (Brown, C. B. P., p. 35). Kennebec; a young male was taken on Lake Cobboscontee, near Augusta, Sept. 17, 1903, after a severe gale and is now in the collection of F. C. Noble, (Noble, J. M. O. S. 1904, p. 16). Sagadahoc; rare, (Spinney). Washington; rare, seen only in summer, (Boardman).

The home of this species is in southern oceans, it being known to breed during the southern summer on Kerguelen Island off the coast of Africa. Dr. J. H. Kidder has recorded this species as feeding on the oily matter floating away from the carcass of a sea-elephant. He also states that on Kerguelen Island they frequent the rocky parts of hillsides, flitting about like swallows and catching minute insects. He states that the Rev. Mr. Eaton found a nest under large rocks on Thumb Mountain, Kerguelen Island, December 8 and that the egg was pure white. Wilson's Petrel occurs rarely but rather generally off the Maine coast from June to September.

Order STEGANOPODES. Totipalmate Swimmers.

Key to the species of STEGANOPODES.

- A. Bill pointed, not hooked, slightly curved at tip. Gannet.
- B. Bill distinctly hooked.
 - 1. Bill more than 12.00 long and with large prominent pouch underneath; plumage white. American White Pelican.
 - 2. Bill under 12.00 and without prominent pouch.
 - a¹. Lores feathered. Man-o'-war Bird (Hypothetical List.)
 - a². Lores not feathered.
 - b¹. Tail feathers 14. Cormorant.
 - b². Tail feathers 12. Double-crested Cormorant.

Family SULIDÆ. Gannets.

Genus SULA Brisson.

Subgenus DYSPORUS Illiger.

117. *Sula bassana* (Linn.). Gannet; Booby Gannet; White Gannet; Solan Goose.

Plumage in adults: head and neck washed with buff above; primaries dusky; feet blackish; otherwise all white. Immature plumage: above general

grayish brown, the feathers with small white V-shaped spots; below white somewhat margined with brown. Wing 19.00 to 20.00; culmen 4.10.

Geog. Dist.—Atlantic coasts and islands, south in winter to Gulf of Mexico and Africa; breeds from Nova Scotia and British Isles northward.

County Records.—Cumberland; winter resident, apparently common, (Brown, C. P. B. p. 33). Hancock; an adult male was killed near Mt. Desert in May, 1898, and seen by me at S. L. Crosby's, (Knight). Kennebec; accidental, one specimen, (Hamlin, 10th An. Rep. Sec. Me. B'd. Agr. p. 173). Knox; very rare, (Rackliff). Sagadahoc; common spring and fall, (Spinney). Washington; common down the bay, (Boardman).

This species is rather irregular or uncertain in its occurrence off our coast, seemingly being most often noted in September and October and again in April and May, though possibly an occasional one may winter. The nesting grounds are north of the State, the nearest one being possibly Gannet Rocks in the Gulf of St. Lawrence. The birds breed in colonies, laying a single egg in a nest of seaweed, mud and grass, or in many cases laying on the bare rock, nearly always nesting on shelves of cliffs overhanging the sea. The egg is chalky white in color, unspotted and covered with a skin of calcareous matter. One taken at the Magdalen Islands, July 20, 1885, measures 3.06 x 1.95. The food consists entirely of fish. They dive headlong into the water after their food, re-appearing with their catch in their bill.

Family PHALACROCORACIDÆ. Cormorants.

Genus PHALACROCORAX Brisson.

Subgenus PHALACROCORAX.

119. *Phalacrocorax carbo* (Linn.). Cormorant; Shag; Crow-duck.

Plumage in summer adults: flanks with white patch and head, upper neck and throat sprinkled with white; white at base of lower mandible; white spot on flanks; upper back, scapulars and wing coverts olive brown bordered by black; general appearance of bird above and below of a glossy black except as above noted. Plumage in winter adults: differs chiefly in lacking white on head. Immature plumage: sides of head, neck and the breast

whitish; head and back of neck brownish, changing into brownish gray on back; lower belly black. To be told in all plumages from the following by having fourteen tail feathers. Wing 13.00 to 14.00; culmen 2.50.

Geog. Dist.—Coasts and islands of the North Atlantic, on the American shore in winter south as far as the Carolinas (casually); now breeding from the Bay of Fundy northward, but formerly said to have nested as far south as Massachusetts.

County Records.—Cumberland; apparently a common winter resident, (Brown, C. B. P. p. 33). Hancock; winter bird among the outer islands, (Knight). Knox; winter, (Rackliff). Penobscot; accidental, one shot at Chemo Pond in October, 1896, by Mr. Mudgett of Orono, (Knight). Sagadahoc; a few from fall to spring, (Spinney). Waldo; winter visitor, (Knight). Washington; not abundant, (Boardman).

The Cormorants are to be found along our coast from October to May, though most general in the extreme winter months. Though they possibly nested along the coast many years ago, there are no recent nesting records. In Labrador and Newfoundland they nest in colonies, making rude nests of sticks and seaweed on shelves of cliffs along the shores and on rocky islands. Three eggs taken in Labrador, June 19, 1884, are bluish white, covered with a chalky layer, and measure 2.44 x 1.49, 2.46 x 1.47, 2.40 x 1.47. Three to six eggs may be laid. The birds are great lovers of fish and consume large numbers, often taking them to their nests and leaving unconsumed portions to rot in the sun. The odor of a Cormorant rookery must be experienced to comprehend it. The general habits of this species are so similar to those of the Double-crested species that the account under that species will prove sufficient.

120. *Phalacrocorax dilophus* (Swain.). Double-crested Cormorant.

Plumage in summer adults: a tuft of lengthened curved black feathers on each side of head behind the eye; back, scapulars and wing coverts gray brown, margined with black on each feather; otherwise glossy black above and below; gular sack orange. Plumage in winter adults: head tufts wanting, otherwise not greatly different. Immature plumage: sides of head and foreneck grayish or whitish growing lighter on breast and darker to black on the belly; back, scapulars and wing coverts grayish brown, feathers black margined; top of head and adjoining neck blackish brown; rump black. To be

distinguished from the preceding species in all plumages by the *tail having only 12 feathers*. Wing 11.75 to 13.00; culmen 2.25.

Geog. Dist. — Atlantic coast of North America, south in winter to the Southern States; breeding from Black Horse Ledge, Maine, northward.

County Records. — Cumberland; apparently an uncommon winter resident, (Brown, C. B. P. p. 33). Hancock; local summer resident, usually about 50 individuals occurring along the coast of the county in summer, a few only of which breed, in winter general and more common coastwise, (Knight). Knox; migrant, (Rackliff). Penobscot; one shot at Kingman about Nov. 18, 1895, by Rev. J. W. Hatch is now in the University of Maine collection, (Knight). Sagadahoc; a few from fall to spring, (Spinney). Waldo; seen roosting on spar buoys near Islesboro in summer, more general in fall and winter about the bay, (Knight). Washington; common in migration, (Boardman).

As a generally distributed species along the coast it is most numerous in point of numbers in fall and spring, but occurs also in winter. During the summer solitary individuals may be seen roosting on spar buoys along the coast east of Rockland. While they roost in summer in considerable numbers on several rocky ledges off the coast of Hancock and Washington Counties, the only place along the coast where they are known to breed is at Black Horse Ledge, near Isle au Haut. While fifteen to twenty individuals may be seen here during the summer, I have never seen more than five nests on this ledge at a time, and more often only one or two nests. Fresh eggs are usually found there in late June or early July if at all, for some years they do not seem to nest there though frequenting the place in usual numbers. The nest is a very slight, in fact scarcely noticeable affair of sticks and seaweed, with occasionally a few rotten fish thrown in as good measure. The two to four bluish white, chalky coated eggs are often badly stained by the nest material. Three eggs from Black Horse Ledge, July 2, 1895, measure 2.31 x 1.55, 2.44 x 1.54, 2.46 x 1.50. This ledge rises sharply from the ocean to a height of about 75 feet and the nests are on shelves on the most precipitous side. The birds perch in a row along this ledge, facing any approaching boat, until it is as near as they deem safe when almost instantly they rise, turning if necessary to face the wind before flying.

Their diet is exclusively fish which they obtain by diving from their perches on spar buoys or while in the water. When driven from their perches they almost invariably fly slightly downward and then along quite near to the water, rising again to perch on another buoy or rock. When going in flocks from one locality to another they usually fly in a more or less one-ranked line, tapering only slightly back from the leader, making strong rather quick strokes of their wings.

Family PELECANIDÆ. Pelicans.

Genus PELECANUS Linnæus.

Subgenus CRYPTOPELICANUS Reichenbach.

125. *Pelecanus erythrorhynchos* Gmel. American White Pelican.

Plumage in summer adults: occipital crest white or pale yellowish; a horny ridge on culmen; primaries black; otherwise white in plumage; pouch and bill reddish; feet orange red. Plumage in winter adults: ridge on culmen and occipital crest wanting. Immature plumage; lesser wing coverts and top of head brownish gray; bill, pouch, face and feet yellowish. Wing 20.00 to 25.00; culmen 13.50; tarsus 4.70.

Geog. Dist.—Temperate North America, breeding from southern Minnesota, Utah and Nevada northward to about 61° north latitude; south in winter to Mexico and Guatemala; rare or casual in Maine.

County Records.—Penobscot; one shot on Passadumkeag Stream near Saponic Lake, May 28, 1892, by Peter Sibley and now in my collection, (Hardy). Washington; one seen at Calais, it was afterward shot just over the line in New Brunswick, (Boardman). York; during the heavy storm of June 8, 1897, a pair of these birds lighted in a field near here (Eliot) and, after staying in a small pond near by for half an hour, they left before anybody could secure them, (H. R. Libby).

This species only straggles to Maine, more usually in late spring. They nest in large colonies on islands in various lakes of the northern tier of western states and northward. The nest is composed of sticks and is placed on the ground. Two to four white, chalky covered eggs are laid. Two eggs from Pyramid Lake, Nevada, June 4, 1890, were laid in a mere depression in the sand. These eggs measure 3.32 x 2.20, 3.37

x 2.17. The birds are essentially fish eaters, flying long distances to fishing grounds. They fly in perfect line, strung out one behind the other, flapping their wings leisurely several times in almost perfect unison, and then sailing a short distance to be repeated. Suddenly the leader spies a fish and closing his wings goes down with a splash into but generally not under the water and the others of the flock follow. They swim and splash around, poking their heads under the water and filling their pouches with fish. The young birds are said to be fed on predigested fish at first, later on being given ordinary undigested food.* (See footnote.)

Order ANSERES. Lamellirostral Swimmers.

Family ANATIDÆ. Ducks, Geese and Swans.

Subfamily MERGINÆ. Mergansers.

Key to the species of MERGINÆ.

- A. Serrations of both mandibles short and blunt, not distinctly inclined backwards at tips; bill under 1.75; wing usually under 8.00. Hooded Merganser.
- B. Serrations of both mandibles conspicuously toothlike and distinctly and strongly inclined backward at tips; bill over 1.75; wing over 8.00.
 - 1. Feathering at base of upper mandible on sides not forming a distinct angle and projecting only very slightly forward; distance from nostril to end of bill under 1.50. American Merganser.
 - 2. Feathering at base of upper mandible on sides forming a distinct prominent outuse angle and projecting markedly forward; distance from nostril to end of bill over 1.50. Red-breasted Merganser.

Genus MERGANSER Brisson.

129. *Merganser americanus* (Cass.). American Merganser; Shelldrake; Gooseander.

Plumage of adult male: head and upper neck glossy greenish black; wing coverts and secondaries (speculum) white, crossed by a very conspicuous

* The Brown Pelican recorded by Dill in J. M. O. S. proves on investigation not to be a Brown Pelican at all. It is a South American species of Pelican and was an escaped bird, being one of three kept as pets by a resident of Castine. As such it has no right to be called a bird of Maine.

black bar; breast and belly white, tinted with salmon; rump and tail ashy gray; back black. Plumage of adult female and of immature birds: chin and adjoining throat white; top of head and lower throat reddish brown; back and tail ashy gray; breast and belly white. Wing 10.50 to 11.50 in male, 9.50 to 10.00 in female; culmen 2.00; bill from nostril to end 1.50 or less; tarsus 1.90.

Geog. Dist.—North America, breeding from Maine and Minnesota northward, also in mountains of Colorado and California; wintering from Kansas, Illinois and Maine southward to South Carolina.

County Records.—Androscoggin; common migrant, a few found in open places on the rivers all winter, (Johnson). Aroostook; breeds in the Fish and Woolastook Valleys, (Knight). Cumberland; a few nest annually about Sebago Lake and I have seen eggs from there, (Knight); common, (Brook). Franklin; common summer resident, (Richards). Hancock; not rare along the coast in winter; a few breed about the larger ponds and lakes, (Knight). Kennebec; rare, (Dill). Knox; winter resident, (Rackliff). Oxford; common migrant, (Johnson). Penobscot; quite rare migrant now, a few nest on the various isolated ponds, lakes and streams, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; quite plenty from fall to spring, (Spinney). Somerset; not very common, apparently only migrant, (Morrell); breeds in northern section of county, (Knight). Waldo; winter resident along the coast, very rarely breeds on the streams, (Knight). Washington; not rare, breeds, (Boardman). York; rare migrant, (Adams).

Rather generally found along the coast from fall to spring, while it appears on the inland lakes and streams as soon as the ice breaks up in spring, remaining in isolated localities within Canadian faunal limits to breed. The nest is built in some hollow stub which is near to or overhanging the water. A nest with nine eggs was found in a hole in a stub about five feet from the surface of the water on the Songo River in late May 1899. The hole in the stub was about two feet deep and was warmly lined with down on which the eggs were laid. These eggs are creamy buff, semi glossy, and measure 2.67 x 1.86, 2.67 x 1.82, 2.63 x 1.84, 2.60 x 1.81, 2.69 x 1.85, 2.65 x 1.69. The incubation period is not far from 22 days and soon after hatching the young birds take to the water, either dropping into it themselves or being carried by their parents where the nest is too far from the water.

About the lakes and streams small family groups of six to twelve young may be seen with the female in late June or July.

The adult birds feed on fish exclusively while inland as far as I have been able to ascertain, preferably on the various species of so called minnows and chubs, though by no means disdaining salmon fry and trout when these are obtainable. Along the coast in winter they eat many mussels and allied species of mollusks, swallowing them shell and all. The shells are soon ground to pieces in their intestines and stomachs, and in dead birds dissected out I have traced the entire process from entire mussel shells down to impalpable mud at the lower end of the intestinal tract.

130. *Merganser serrator* (Linn.). Red-breasted Merganser; Red-breasted Shelldrake.

Plumage of adult male: head and throat black, greenish above; rump and sides barred with black and white; a broad rufous, black streaked band on upper breast and lower neck; breast, belly, wing coverts and secondaries (speculum) white. Plumage of adult females and immature birds; wing coverts, secondaries, breast and belly white; top of head grayish brown, rufous washed; sides of head and throat rufous, paling on throat; back and tail ash gray. Wing 8.50 to 9.50; culmen 2.60; bill from nostril to end usually about 1.75; tarsus 1.85.

Geog. Dist.—Northern portion of the northern hemisphere, south in winter on the American coasts throughout the United States; breeds sparingly from the northern tier of states northward.

County Records.—Androscoggin; fairly common migrant, (Johnson). Arrostook; not rare summer resident about the waterways of the wilder portions of the county, (Knight). Cumberland; common fall to spring along the coast, (Lord). Franklin; rare migrant, (Richards). Hancock; breeds locally by single pairs or in small scattered colonies on some of the islands, fairly common spring and fall, not rare winters, (Knight). Kennebec; (Dill). Knox; resident, (Rackliff). Oxford; quite common, (Nash). Penobscot; summer resident, nesting on the larger isolated lakes, (Knight). Piscataquis; quite common summer resident, (Whitman). Sagadahoc; quite plenty from fall to spring, (Spinney). Waldo; not very common and not nesting of late years, (Knight). Washington; not rare, (Boardman). York; (Butters).

Though locally resident along the coast from Knox County eastward and nesting on a few of the outer islands, the species is more generally found from fall to spring when it occurs along the entire coast. Inland it occurs on a few of the more

isolated ponds and lakes of northern Maine as a breeding bird from the time the ice breaks up in the spring until fall. The nest is composed of dry grass, often lined with down from the breast of the female, and is almost always on the ground and well hidden in the grass or under growing plants on some island. Six to twelve creamy buff, slightly greenish tinged eggs are laid. Ten eggs were found on Saddleback Ledge, June 21, 1894, in a nest of dry grass and seaweed warmly lined with down. The nest was under a clump of bushes near the shore of this island in Jericho Bay. These eggs measured 2.65×1.76 , 2.66×1.72 , 2.49×1.70 , 2.60×1.76 , 2.50×1.76 , 2.60×1.77 , 2.54×1.74 , 2.60×1.80 , 2.68×1.75 , 2.60×1.76 .

The food of these birds is identical with that of the American Merganser as far as I have been able to ascertain by dissection and examination, and in general, outside of their nesting habits, they act very similarly. When nesting on such an island as Trumpet Island, where at one time several pairs of these birds bred, sometimes two or three birds left at the approach of the boat, while on other occasions no birds were seen about the island. Sometimes the females remained on the nests until almost trodden on before leaving, while on other occasions no birds at all were seen though nests containing eggs were found.

Genus LOPHODYTES Reichenbach.

✓131. *Lophodytes cucullatus* (Linn.). Hooded Merganser; Water Pheasant; Hairy Head.

Plumage of adult male: head with large white crest, sharply bordered with black; head, neck and back otherwise black; breast and belly white; sides barred with black, on cinnamon rufous. Plumage of adult female: crest reddish brown; head, neck, back, sides and upper breast grayish or fuscous brown; upper throat, lower breast and belly white. Immature plumage: crest wanting or rudimentary; sides distinctly brown. Wing 7.40 to 8.00; culmen 1.48; tarsus 1.11.

Geog. Dist.—North America, south to Cuba and Mexico, breeding locally throughout its range; casual in Europe.

County Records.—Androscoggin; fairly common migrant, (Johnson). Cumberland; rare in northern county, (Mead); transient, occurs between March 31 and April 17, and in autumn up to the very last of November, (Brown, C. B. P. p. 33). Franklin; rare migrant, (Richards). Hancock; fall and spring migrant coastwise, very rare summer resident about the ponds, (Knight). Kennebec; very rare, (Dill). Knox; rare migrant, (Rackliff). Oxford; breeds at Lake Umbagog, (Maynard, L. B. C. Co. N. H. & O. Co. Me. p. 30). Penobscot; rare migrant and still rarer summer resident about the lakes, (Knight). Piscataquis; common breeds, (Homer). Sagadahoc; very few from fall to spring, (Spinney). Somerset, rare migrant, (Morrell); breeds very rarely in northern county, (Knight). Washington; not rare, breeds, (Boardman).

There is no evidence that this species winters along the coast, but it occurs generally though never commonly along the coast in March, April and May and again in September, October and November. Inland it breeds very locally and rarely about various ponds and lakes, arriving shortly after the ice leaves in spring and leaving in October. The eggs are laid in a warm nest of down situated in hollow trees and stumps, usually not far from the water. The time of nesting is late May and young are seen with the parents the last of June. Eight to fourteen buffy white eggs are laid, and a selected specimen measures 2.08 x 1.70. In habits they do not differ greatly from the other Mergansers.

Subfamily ANATINÆ. River Ducks.

Key to the species of ANATINÆ.

- A. Bill very strongly and decidedly spatulate. Shoveller.
- B. Bill not spatulate.
 - 1. Tail feathers not pointed at tips but broad and rounded. Wood Duck.
 - 2. Tail feathers always pointed at tips.
 - a¹. Culmen shorter than middle toe without claws.
 - b¹. Tail feathers 16; more than thirty lamellae on bill visible externally. Gadwall.
 - b². Tail feathers 14; not more than fifteen lamellae on bill visible externally. Baldpate.
 - a². Culmen longer than middle toe without claw.

- b¹. Wing over 8.50.
 - c¹. Colored band on wing (speculum) not with a white or grayish bar.
 - b¹. Legs brownish; bill dusky. Black Duck.
 - b². Legs bright red; bill clear yellow. Red-legged Black Duck.
 - c². Colored band on wing (speculum) edged or barred with white or grayish brown.
 - d¹. Speculum metallic green, grayish brown in female, narrowly edged with white; tail of sixteen much graduated feathers; its shortest feather less than two-thirds length of longest. Pintail.
 - d². Speculum rich metallic violet, bordered by narrow bands of black and white at base and tip. Mallard.
- b². Wing under 8.50.
 - c¹. Lesser wing coverts blue or grayish blue, speculum green. Blue-winged Teal.
 - c². Lesser wing coverts gray, speculum green.
 - d¹. White bar in front of bend of wing. Green-winged Teal.
 - d². No white bar in front of bend of wing. European Teal.

Genus ANAS Linnæus.

✓ 132. *Anas boschas* Linn. Mallard.

Plumage of adult male: head and throat glossy iridescent bluish black; breast chestnut; back grayish brown; rump, upper and under tail coverts black; neck white-ringed; belly whitish marked with wavy dark lines; speculum metallic violet, bordered at base and tip by narrow black and white bands. Plumage of adult female: speculum as in male; breast and belly ochraceous buffy, mixed with grayish brown; central portions of the feathers of the upper parts dusky marked; top and sides of head dusky and buffy streaked; otherwise much as in male. Immature plumage similar to that of female. Wing 10.00 to 12.00; culmen 2.20; tarsus 1.65.

Geog. Dist.—Northern parts of northern hemisphere; in America south to Panama and Cuba; breeding on the Atlantic coast from Labrador northward, and in the interior states from Indiana and Iowa northward; in California locally from Los Angeles northward.

County Records.—Androscoggin; rare migrant, (Johnson). Cumberland; rare in northern part of county, (Mead); uncommon, chiefly transient, occasionally occurring in winter, (Brown, C. P. B. p. 30). Hancock; rare, (Dorr). Kennebec; very scarce, (Dill). Knox; rare, in winter, (Rackliff). Oxford; very rare, (Nash). Penobscot; I shot one last year (1896), (Hardy). Sagadahoc; very few fall to spring, (Spinney); from October to November

1, 1904, numbers were seen in Merrymeeting Bay, (Noble, J. M. O. S. 1905, p. 11). Somerset; accidental, one shot November 7, 1893, (Morrell). Washington; accidental, (Boardman).

From October through April they occur quite rarely along the entire coast, and occasionally in the interior spring and fall, though some exceptional years they may be even locally common along the coast. The eggs are pale cream buff or bluish or greenish white, and are six to ten in number. Ten from North Dakota are pale greenish white. They were found in a nest on the ground on the open prairie, near the roadside, about two hundred yards from a large slough. The nest was made of dried grass, weed stalks and warmly lined with down from the breast of the parent. It was found May 28, 1897. The eggs measure 2.07 x 1.60, 2.09 x 1.65, 2.10 x 1.58, 2.09 x 1.60, 2.10 x 1.63, 2.07 x 1.58, 2.10 x 1.57, 2.12 x 1.55, 2.07 x 1.60, 2.02 x 1.58. The nests are usually placed near sloughs and meadow marshes. The Mallard is the ancestor of many of our varieties of domestic Ducks and the quack of this species is not different from that of the domestic species. Their diet is largely vegetable matter, tender buds and roots of *Vallisneria* and other water plants, also insects, frogs, tadpoles and other water life.

133. *Anas obscura* Gmel. Black Duck.

Plumage of adult male and females: speculum purple, bordered by black; top of head fuscous, slightly buffy streaked; sides of head and throat buffy, blackish streaked; below brown, feathers all bordered with yellowish or buffy; above slightly darker brown, feathers buffy margined. Downy young: above olive brown with six light buff spots: below dingy buff, paler on belly; a dusky streak from bill to eye, and back of eye; a dusky line from ear backward. Wing 10.50 to 11.50; culmen 2.20; tarsus 1.75.

Geog. Dist.—North America west to Utah and Texas; breeding from Illinois and New Jersey northward to Newfoundland and eastern coast of Labrador; winters from Massachusetts south to the Greater Antilles.

County Records.—Androscoggin; common migrant, a few remain to breed, (Johnson). Aroostook; breeds on many of the lakes and streams, (Knight). Cumberland; common, (Brock). Franklin; common summer resident, (Swain). Hancock; common in spring and fall, some remain all summer and nest both along the coast and inland, have seen no winter birds of this

subspecies, (Knight). Kennebec; (Dill). Knox; (Rackliff). Oxford; breeds, (Nash). Penobscot; breeds locally along secluded streams and about ponds where there are suitable meadows, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; plenty, a few in summer, (Spinney). Somerset; common summer resident, (Morrell). Waldo; breeds to some extent, (Knight). Washington; common, (Boardman). York; migrant, (Adams).

The exact status of the two varieties of Black Ducks occurring in Maine is still subject to some doubt but the following seems very certain. The breeding birds which remain with us through the summer and until October all seem to be the Black Duck. It is a question whether or not any remain all winter or how much later than October they do remain. It is another question as to the time of their arrival in spring along the coast, but the few spring birds I have had occasion to examine from inland localities after the ice had left in late April were all Black Ducks. From spring to fall they remain on their inland breeding grounds about the lakes and streams, forming family assemblies of ten to fifteen in late summer. Some few nest among the islands and along the coast. They are however commonest, and very general everywhere in spring and fall.

The nest is placed on the ground in grass or rushes, under a bush on or near the shore, very often in some meadow or swamp or on some island in a lake or pond. Six to twelve elliptical pale buff eggs are laid. A nest from East Fairfield, April 28, 1897, was composed of leaves and pine needles, lined with feathers from the breast of the parent. This nest was placed on the ground near a stump in the woods some distance from the water. The eggs measure 2.34 x 1.60, 2.25 x 1.60, 2.32 x 1.64, 2.32 x 1.69, 2.26 x 1.60, 2.35 x 1.65, 2.33 x 1.66, 2.40 x 1.67, 2.26 x 1.65, 2.31 x 1.70, 2.31 x 1.68, 1.16 x 0.96, this latter egg being a runt and containing only white.

During the spring the birds congregate in small flocks on overflowed meadows and when disturbed rise saying "quack, quack" and circle around overhead, finally settling in some safer spot in the same or another meadow. At this season an

individual, probably the male, occasionally may be seen billing and fondling the head of another individual associated with it in the water. They feed on a great variety of vegetable matter, tender roots and buds of aquatic plants, grass roots in the meadows, and insects, being also decidedly partial to frogs, tadpoles and even small minnows. I have known individuals to so gorge themselves with huckleberries in late August that they would go to sleep under the bushes near the water, and one which I started from under my feet in this condition when I too was after huckleberries was unable to fly it was so gorged, but it managed to scramble into the water and swim away, disgorging itself until finally able to rise and fly away, all the time quaking incessantly.

A family group, composed of the parent and young is a most delightful sight, the mother swimming along with the tender young, they diving when she does, and if desperately pressed by danger seeking safety under the lily pads, where the only evidence of young birds is a slight hump in the pad. I have found young one-third grown ashore in the meadows, and though they were pursued through the bushes they were too quick to be caught.

133a. *Anas obscura rubripes* Brewster. Red-legged Black Duck.

Adult plumage: similar to that of the Black Duck; readily distinguished by its bright red legs and clear yellow bill; size generally larger. Wing 1.60 to 1.70; culmen 2.10; tarsus 1.68.

Geog. Dist.—Breeding range probably Hudson Bay Region and northern Labrador, westward through the northern interior; in migration or in winter along the Atlantic coast from Newfoundland to Virginia, and in the interior as far south and west as Arkansas.

County Records.—Cumberland; wintering about Portland, (Brownson, J. M. O. S. 1905, p. 28). Hancock; locally common fall to spring along coast in large flocks, (Knight). Oxford; earliest date seen at Umbagog Lake, September 28, 1889, usually not seen until about October 8, after which it becomes common, (Brewster, Auk 1902, p. 183 et seq.). Penobscot; migrant in late October, (Knight). Waldo; fall to spring, locally common in flocks in Penobscot River and Bay, (Knight).

The birds of this race enter Maine about the first of October, and are probably of general occurrence throughout the State. They are commonest along the coast where scattered flocks, containing often many individuals, remain locally through the winter, beginning to leave in late March or early April. Their nests and eggs seem to be unknown, but are not likely to differ much from the closely related Black Duck. Two individuals which were killed in winter on the Penobscot River near Bucksport had been feeding on a peculiar red berry about eight millimeters in diameter, containing much seed and little pulp. The birds were literally crammed with these fruit which were unknown to me and which have never been identified but which were most certainly not any common fruit in Maine or I would have known them.*

Genus CHAULELASMUS Bonaparte.

135. *Chaulelasmus streperus* (Linn.). Gadwall; Gray Duck.

Plumage of adult male: head and neck pale brownish, buffy at sides, thickly sprinkled with black; breast and neck black, each feather centrally spotted and bordered with white; sides, back and scapulars with wavy markings of slate and white; middle wing coverts chestnut; speculum white, the lower feathers ashy and white tipped; rump and tail coverts black, belly whitish. Plumage of adult female: belly, lower breast and under tail coverts white; upper breast and sides yellowish buffy, thickly mixed with black; above chiefly brownish dusky, spotted and barred with buffy; head and neck longitudinally streaked with brownish dusky and buffy; speculum ashy gray and white; chestnut of wing coverts restricted or absent. Immature plumage: similar to female. Wing 10.00 to 11.00; culmen 1.68; tarsus 1.57.

Geog. Dist.—Nearly cosmopolitan: breeds on the Atlantic coast of America at Anticosti, and in the interior from Kansas northward; in California formerly said to have nested near Los Angeles, thence locally northward; winters from Virginia to Florida and Texas.

County Records.—Cumberland: two specimens April 29, 1879, (Smith, F. & S. 20, p. 125); one shot at Falmouth by John Whitney in the fall of 1903 and in the possession of T. A. James, (Lord). Sagadahoc; a female taken October 27, 1904, and October 28 and 29 a number were seen, fifteen or more in all, (Noble, J. M. O. S. 1905, p. 12). Washington; accidental, (Boardman).

* Since writing this I have been able to positively identify the fruit as that of *Lepargyrea Canadensis* Nutt., a northern shrub not known from this particular region.

It seems highly probable that the Gadwall is a bird of regular occurrence, though at best rare on our coast, and occurs probably during migration to and from its only known breeding grounds on the Atlantic coast of America at Anticosti. The eggs are said to be laid in a nest of grass lined with down which is situated on the ground in meadows and marshes near lakes or ponds. Eight to twelve cream, buff or clay colored eggs are said to be laid. Ridgway gives average dimensions as 2.09 x 1.57.

Genus MARECA Stephens.

137. *Mareca americana* (Gmel.). Baldpate; American Widgeon.

Plumage of adult male: head and neck buffy whitish, thickly mixed with black; a bright metallic green patch on each side of head between eye and, top of head and nape; middle of crown buffy white; upper breast and sides vinaceous, the latter with wavy black lines; rest of breast and belly white; back grayish brown, barred with black, often vinaceous tinged. Plumage of adult female and immature birds: head and throat pale or buffy white streaked and barred with black; upper breast and sides pale vinaceous mixed with grayish; rest of breast and belly white; back grayish brown, barred with pale buffy; wing coverts grayish in part, edged with white, their ends often black. Wing 10.00 to 11.00; culmen 1.40; tarsus 1.55.

Geog. Dist.—North America, breeding from Texas occasionally, and regularly from Dakota and Minnesota north to the Arctic Ocean; does not breed along the Atlantic coast; in winter occurs as far south as Central and even South America.

County Records.—Androscoggin; migrant, (Johnson). Cumberland; often common, (Brock). Hancock; rare, (Dorr). Oxford; very rare, (Nash). Penobscot; one shot at Monument Brook, (Hardy). Sagadahoc; few fall and spring, (Spinney); common migrants in waters of Merrymeeting Bay in 1904 from late October to November 5, (Noble, J. M. O. S. 1905, p. 13). Washington; very rare, (Boardman).

This species occurs quite generally as a migrant along the coast, often locally being present in considerable numbers, while inland it is decidedly rare. They chiefly occur along the coast from late October until well along in November and again in March and early April. A nest found in Benson County,

North Dakota, June 5, 1897, contained nine eggs of a pale buff color. These measure 2.09 x 1.51, 2.10 x 1.51, 2.08 x 1.50, 2.08 x 1.53, 2.15 x 1.50, 2.04 x 1.50, 2.15 x 1.52, 2.10 x 1.50, 2.08 x 1.50. The nest was composed externally, of dried grasses, weed stalks and vegetable mould, well rimmed and shaped internally, and lined with down from the breast of the female. It was situated on the ground among a heavy growth of wild rose bushes near a good sized coulee. It would appear that eight to twelve eggs are laid, the nest being situated on the ground, well concealed among the marsh grass or under bushes near some body of stagnant water. Their call consists of a sort of whistled "whew, whew," which seems to be a note of contentment uttered when they are feeding. Their food is largely vegetable and consists of *Vallisneria* and the tender stems and roots of other aquatic plants. Like the other river Ducks they feed largely by dipping and dabbling instead of by diving properly.

Genus NETTION Kaup.

138. *Nettion crecca* (Linn.). European Teal.

Plumage of adult male: differs from the plumage of the male Green-winged Teal as follows; no white bar on breast in front of bend of wing; undulated black and whitish markings of the sides much coarser; the other plumages do not seem to be known or studied sufficiently well in this country to differentiate them from the corresponding female and immature plumages of the Green-winged Teal, a reference to the descriptions under which species will give practically the plumages except for slight differences previously noted.

Geog. Dist.—Northern parts of Old World; casual in eastern North America, the Aleutian Islands and California; straggler to Maine.

County Records.—Cumberland; an adult male in full plumage was taken in Casco Bay, April 6, 1903, and is now in the collection of Dr. Brock, (Lord).

We have only this one record of the species for Maine and the total number for eastern North America is very small. The habits are presumably not greatly different from those of its near relative. Six to fifteen yellowish white eggs are laid. Six were taken at Eyrarbakka, Iceland, July 5, 1890, which are

now in my possession. They measure, 1.75 x 1.35, 1.75 x 1.35, 1.75 x 1.35, 1.74 x 1.30, 1.81 x 1.31, 1.76 x 1.32. The nest is composed of grass and plant stems, lined with down and feathers, and is situated usually on the ground in a marsh or meadow not far from the water.

139. *Nettion carolinensis* (Gmel.). Green-winged Teal.

Plumage of adult male: a white bar on breast in front of bend of wing; chin black; a metallic green patch from eyes backward, and this bordered below by pale buff line; head and neck otherwise chestnut rufous; upper back and lower neck, scapulars, sides and flanks waved with black and white; wing coverts brownish gray, tipped with buffy; under tail coverts black in middle and buffy at sides; lower back grayish fuscous; speculum metallic green with lower feathers black, white-tipped. Plumage of adult and immature females: throat and sides of neck white, black spotted; top of head brownish fuscous, edged with cinnamon; upper parts general fuscous, more or less edged and barred on the feathers with paler brown and grayish; breast and sides barred with dark and washed with rufous; belly and under tail coverts white, sometimes spotted with dark; wing much as in male. Immature male plumage: differs from adult female in that the belly and sides are white, unmarked. Wing 6.30 to 7.50; culmen 1.50; tarsus 1.30.

Geog. Dist.—North America, breeding from North Dakota, Minnesota and New Brunswick northward; winters from Virginia southward to Honduras and Cuba.

County Records.—Androscoggin; fairly common migrant, (Johnson). Cumberland: common, (Brock). Hancock; rare, (Dorr). Kennebec; (Dill). Knox; rare migrant, (Rackliff). Oxford; common, (Nash). Penobscot; rare, in fall, (Knight). Sagadahoc; very few spring and fall, (Spinney). Somerset; not common migrant, (Morrell). Waldo: spring and fall migrant, rare, (Knight). Washington; not common, (Boardman).

Though of general occurrence along the coast in fall migration the species is usually in rather limited numbers save locally during some years. Inland about ponds and streams a few may be expected in the fall, but seemingly it is not noted inland in spring, and does not breed with us. Six to fifteen buffy white eggs are laid in a nest on the ground near some slough or in a meadow. Ten eggs from Benson County, North Dakota May 28, 1901, measure 1.72 x 1.28, 1.72 x 1.29, 1.72 x 1.31, 1.70 x 1.32, 1.72 x 1.30, 1.72 x 1.30, 1.77 x 1.29, 1.77 x 1.28, 1.69 x 1.31, 1.76 x 1.36. These eggs were well advanced in

incubation and were situated in a nest composed of grass, lined with down, which was placed near the edge of a rush bordered slough. Similar nesting sites in meadows and marshes near some body of fresh water are usually selected. In migration they occur in small flocks of three or four to ten or twelve in September and October, and again along the coast in April. Their food is similar to that of the Blue-winged Teal.

Genus QUERQUEDULA Stephens.

140. *Querquedula discors* (Linn.). Blue-winged Teal.

Plumage of adult male: lesser and middle wing coverts grayish blue; end of greater wing coverts white; speculum green; feathers of the fuscous back marked with curves of buff; black on chin and at sides of bill; crown dusky; a wide white band, bordered behind with black, crossing front of head; head and neck otherwise dull plumbeous with glossy purple on sides of occiput; below pale chestnut, spotted with black. Plumage of adult female and adult male in breeding season: dusky above with buffy bars; the fuscous crown grayish margined; head, neck and under parts dull pale brownish white, more or less spotted or streaked with dusky; speculum deeper green; otherwise similar to previous plumage. Immature plumage: belly pale, dull, buff white, unspotted; speculum a dull grayish non-metallic brown. Wing 7.00 to 7.65; culmen 1.52; tarsus 1.25.

Geog. Dist.—Chiefly eastern North America, but also north to Alaska, breeding from North Dakota, Kansas, northern Ohio and Maine (rarely), northward; wintering south to the West Indies, Lower California, and northern South America.

County Records.—Androscoggin; fairly common migrant, (Johnson). Aroostook; one specimen, it should occur regularly however, (Knight). Cumberland; common, (Brock). Franklin; rare migrant, (Richards). Hancock; occasional in fall at least, (Knight). Kennebec; (Dill). Knox; rare migrant, (Rackliff). Oxford; quite common, (Nash). Penobscot; seemingly quite a rare migrant, (Knight). Piscataquis; rare, (Homer); one at Milo about September 21, 1897, (Cooper). Sagadahoc; common spring and fall, (Spinney); flocks of fifty, one hundred and even two hundred seen in September, 1904, in Merrymeeting Bay, (Noble). Somerset; common migrant, (Morrell). Waldo; a few at least occur, (Knight), Washington; common, breeds, (Boardman).

The known breeding range of this little Duck in Maine seems to be only within the limits of Washington County, where it is in all probability not a common breeding bird at present, what

ever its status was in the past. In North Dakota, where it is said to nest commonly, the nest of fine soft grasses, lined with down, is situated on the ground in a marsh or meadow near some body of stagnant water. Eleven eggs found near Devil's Lake, North Dakota, June 3, 1895, were buffy white in color and measure 1.72 x 1.28, 1.79 x 1.26, 1.73 x 1.27, 1.81 x 1.28, 1.81 x 1.25, 1.83 x 1.26, 1.74 x 1.25, 1.74 x 1.26, 1.77 x 1.26, 1.76 x 1.25, 1.76 x 1.25. Six to fifteen eggs is the range in number.

These Ducks generally occur in September and October in flocks of ten to fifteen, occasionally and locally in far larger flocks along the coast, and in small flocks about the inland waters locally at the same season, also locally in April and May. They are very tame usually, and when driven to flight move compactly and speedily. Their food consists of tender aquatic plants, snails, allied mollusks, water insects, tadpoles, and similar substances

Genus SPATULA Boie.

142. *Spatula clypeata* (Linn.). Shoveller; Spoonbill.

Plumage of adult male: head and neck iridescent bluish green; breast white, sometimes spotted with dusky; back and line down lower neck fuscous; lower breast and belly chestnut; tail coverts dark greenish; wing coverts grayish blue, the greater ones tipped with white, forming a white band; speculum metallic green, white tipped; outer scapulars white. Plumage of adult female and immature: wing as in male but colors duller; back fuscous, feathers marked with whitish and buffy; head and neck brownish buffy, streaked with dusky; below rather grayish brown, washed with buffy and spotted with dusky. Immature plumage: the young male has the abdomen chestnut tinged, and colors slightly brighter than those of the female, while the immature female has dusky speculum and slate gray wing coverts, the speculum being only faintly glossed with green and broadly tipped with brownish white. Wing 9.00 to 10.00; culmen 2.65; tarsus 1.45; width of bill at end 1.15; width of bill at base 0.57; bill decidedly spatulate.

Geog. Dist.—Northern hemisphere, in North America much commoner in the interior states; breeds locally south to Texas, but generally from North Dakota and Kansas northward; winters from Virginia and southern Illinois to South America.

County Records.—Cumberland; rare, (Brock); two in fall of 1900, one in spring and two in fall of 1901, (Lord); six earlier specimens than the foregoing recorded, (Smith, F. & S. 20, p. 125). Sagadahoc; rare spring and fall, (Spinney). Washington; accidental, (Boardman).

The Shoveller is a rare spring and fall migrant along the coast, and does not breed in Maine. The nest of grass, lined with down, is placed on the ground in a marsh or bog hole. The eggs are six to twelve in number, grayish or buffy white in color. Twelve were found in a typical nest near Devil's Lake, North Dakota, May 31, 1894. They measure 2.10 x 1.39, 2.03 x 1.43, 2.14 x 1.41, 2.11 x 1.36, 2.09 x 1.40, 2.09 x 1.40, 2.09 x 1.39, 2.14 x 1.42, 2.09 x 1.41, 2.02 x 1.40, 2.14 x 1.39, 2.10 x 1.44.

In the west little family parties of these birds may be seen feeding in the shallow water of small ponds and pug holes. Their food consists of tender vegetable shoots of aquatic plants, insects and larvae found in water. They are great dabblers and dippers.

Genus DAFILA Stephens.

✓ 143. *Dafila acuta* (Linn.). Pintail.

Plumage of adult male: head and throat olive brown, darker on crown; faintly glossed on sides of occiput with iridescent metallic purple; hind neck black with white stripe at sides running to upper breast; breast and belly white; scapulars black, streaked with pale buffy white; back, sides and flanks mixed wavy white and dusky; speculum green to bronzy purplish, white tipped and with subterminal bar of black; tail much graduated, dusky or grayish, the long central feathers with a greenish gloss. Plumage of adult female: above grayish dusky, barred with pale buffy; head streaked with buffy and dusky; lower parts whitish, washed with buffy on breast and more or less mottled or streaked with blackish; speculum grayish brown, white bordered. Immature plumage: very similar to female, the young males being brighter while the young females are more heavily streaked and spotted beneath. Wing 9.50 to 10.50; culmen 2.00; tarsus 1.60; tail of adult male 8.00; tail of adult female 4.50.

Geog. Dist.—Northern hemisphere, breeding in the interior states from North Dakota and Illinois northward, also rarely near Los Angeles, California; winters from Virginia and Texas to Panama and Cuba; does not breed along the Atlantic coast.

County Records.—Androscoggin; rare migrant, (Johnson). Cumberland; fairly common, (Brock). Franklin; rare migrant, (Richards). Kennebec; (Dill). Knox; rare migrant, (Rackliff). Oxford; very rare, (Nash). Piscataquis; I have a specimen taken at Sebec Lake and identified by Brewster, (Ritchie). Sagadahoc; rare spring and fall, (Spinney); on Merry-meeting Bay, in 1904, an occasional one was seen in early September, and by the middle of the month bunches of five to eight were not unusual, (Noble). Somerset; rare, two specimens in the fall of 1895, (Morrell). Washington; accidental, (Boardman).

Though a somewhat general and usually rare migrant along the coast, this species appears locally some years in quite considerable numbers comparatively. They usually pass through in late March and April and again in September and October. A nest found in Benson County, North Dakota, June 15, 1896, was placed on the ground, well hidden among flags and nettles not far from a slough. The nest was composed of dry grass and rushes, lined with down, and contained seven buffy white eggs. These eggs measure 2.00 x 1.40, 1.91 x 1.33, 1.99 x 1.44, 2.06 x 1.38, 2.04 x 1.38, 2.01 x 1.40, 2.10 x 1.40. The female did not leave the nest until almost trodden upon. Though I can write nothing very definite about their food it probably is very similar to that of the other Ducks.

Genus AIX Boie.

144. *Aix sponsa* (Linn.). Wood Duck; Bridal Duck; Rainbow Duck; Regal Duck.

Plumage of adult male: head iridescent green, purple and violet except white lines from bill over eye, at side of prominent crest and some white on crest; bands from throat to side of head and to nape and throat white; breast chestnut with reddish purple gloss, spotted with white; belly and band in front of wings white; sides and flanks fulvous, waved with black; back somewhat iridescent greenish brown, darkest on scapulars; speculum steel blue. Plumage of adult female and immature birds: chin, throat, and from base of bill around eye and to back of head white or whitish; rest of head gray, the crown and rudimental crest slightly greenish glossed; breast and sides brownish gray, tinged with buffy; back grayish brown, glossed on wings and scapulars with greenish or purplish. Wing 8.80 to 9.70; culmen 1.35; tarsus 1.35.

Geog. Dist.—Temperate North America, breeding from Florida to Hudson Bay; winters from Virginia southwards to Central America and Cuba.

County Records.—Androscoggin; summer resident, (Johnson). Aroostook; rare but generally locally distributed summer resident, (Knight). Cumberland; common, (Mead); rather common transient, a few remain through summer, (Brown, C. B. P. p. 31). Franklin; rare summer resident, (Richards). Hancock; rare local summer resident, (Knight). Kennebec; common, (Dill). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; locally distributed summer resident, becoming far too rare of late years, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; quite common in fall, (Spinney). Somerset; rare summer resident, common migrant, (Morrell). Waldo; rare migrant, (Knight). Washington; common, (Boardman). York; migrant, possibly a few breed, (Adams).

Were these birds able to talk they might truthfully say "Morituri salutamus", for though formerly common about many ponds, lakes and rivers of Maine from spring to fall, and most certainly breeding in every county in the State, this species has become so reduced in numbers that at present it is only a rare local breeding bird. Along the coast where it formerly occurred generally in spring and fall it is now much rarer at these seasons. It seems only a question of time when the Wood Duck will have followed the Great Auk, Labrador Duck and others to the "land of extinction". At present they still occur in decimated numbers from April to late November, and scattered pair remain to nest near some isolated pond or stream.

The nest is placed in a natural cavity of a tree, usually not far from the water, but often at a great height. On a bed of grass, warmly lined with down from the breast of the parent, six to fourteen pale buff eggs are laid, the average dimensions being near 2.10 x 1.50. The mated birds are very affectionate to one another, the male gently caressing the female with his beak. The young are carried from the nest to the water in the beak of the parent, or it has been reported sometimes on the back of the parent. Their alarm call is a peculiar whistle and the love note seems to be a low whistled caressing note.

Subfamily FULIGULINÆ. Sea Ducks.

Key to the species of FULIGULINÆ.

- A. Tail feathers very stiff and pointed with very narrow webs; tail more than half as long as wing. Ruddy Duck.
- B. Tail feathers normal and with normal webs.
 - 1. Feathers either at sides of bill or on culmen (or both) extending forward beyond the rear of the nostril.
 - §. Only feathers on culmen extending beyond rear of nostril.
 - a¹. Feathers on culmen extending forward in a narrow line; nostril narrow and elongated. King Eider.
 - a². Feathers on culmen not extending forward in a narrow line; nostril rounded. White-winged Scoter.
 - §§. Feathers on sides of bill not extending beyond rear of nostril, sometimes nearly or quite to it.
 - a¹. The arms of the V-like bare space on top of bill narrow and pointed. Greenland Eider.
 - a². The arms of the V-like bare space on top of bill broad and rounded. American Eider.
 - 2. Feathering at sides of bill never extending beyond rear of nostril.
 - §. Wing under 7.00. Bufflehead.
 - §§. Wing over 7.00.
 - ?. Difference between shortest and longest tail feathers less than length of bill from nostril.
 - a¹. Bill wider at end than at base.
 - b¹. Speculum bluish gray. Ring-necked Duck.
 - b². Speculum white with black tip.
 - c¹. Flanks white; wing generally over 8.25. Scaup Duck.
 - c². Flanks vermiculated with blackish; wing generally under 8.25. Lesser Scaup.
 - a². Bill not wider at end than at base.
 - b¹. Greatest width of bill not more than one-third length of culmen; bill over 2.00. Canvas-back.
 - b². Greatest width of bill much over one-third (often nearly half) of length of culmen. Redhead.
 - ???. Difference between shortest and longest tail feathers more than length of bill from nostril.
 - a¹. Wings with either speculum or some other portion above white.
 - b¹. Speculum metallic violet blue or dusky brownish gray. Harlequin Duck.
 - b². Speculum white or much of wing white.
 - c¹. Head and neck uniform in color and either all white or all brownish gray. Labrador Duck.

- c². Head and neck either blue black or blue green with white lores or brown with a decided white collar on front of chest.
- d¹. Speculum in wing crossed by dark bar; nostril near middle of bill. Barrow's Golden-eye.
- d². Speculum in wing not crossed by dark bar; nostril nearest tip of bill. Am. Golden-eye.
- a². No white in wing.
- b¹. Bill under 1.25.
 - c¹. Central tail feathers longer than others and pointed; under tail coverts white. Old Squaw.
 - c². Central tail feathers not sharply pointed; under tail coverts not white. Harlequin Duck.
- b². Bill over 1.25.
 - c¹. Feathers on culmen extending much farther forward than those on lores. Surf Scoter.
 - c². Feathers on culmen not extending much farther forward than those on lores. American Scoter.

Genus AYTHYA Boie.

146. *Aythya americana* (Eyt.). Redhead; American Pochard.

Plumage of adult male: head and upper neck chestnut red with reddish purple gloss; lower neck, breast, upper back, upper and under tail coverts black; back, scapulars, sides and flanks barred with vermicular black and white lines *of equal width*; wing coverts brownish gray. Plumage of adult female: head and neck grayish brown, almost white on chin and adjoining throat; back, scapulars, chest, sides and flanks grayish brown, more or less margined with buffy or ashy; bill with indistinct band across end. Young males: somewhat between adult male and female in plumage. Young females: similar to adult female. Wing 8.50 to 9.50; culmen 2.12; tarsus 1.50. End of bill moderately depressed with the nail decidedly hooked.

Geog. Dist.—North America, breeding from California, Michigan and Maine (rarely) northward; winters from Virginia southward.

County Records.—Cumberland; fairly common, (Brock). Kennebec; (Dill). Knox; rare migrant, (Rackliff). Oxford; not very common, (Nash). Penobscot; one shot at Levant, October 26, 1896, now in the University of Maine collection, (Knight). Sagadahoc; two captured in Merrymeeting Bay, Nov. 4, 1903, in 1904 first seen on October 15, and seen frequently from Oct. 20 to Nov. 1 in small flocks, (Noble). Washington; rare, has been known to breed, (Boardman).

Mr. Boardman formerly found this species nesting near Calais, the only instance recorded for Maine. The evidence now at hand indicates that it occurs chiefly along the coast in fall migration, during October, and occasionally inland at the same time. Under suitable conditions the species may be locally frequent some seasons as reported by Mr. Noble. A nest taken in Benson County, North Dakota, June 25, 1897, was composed of dried bullrushes and much "marsh hay grass" lined with down. It was supported among thick growing bullrushes with a depth of two and a half feet of water under the nest. The female flew from it and performed the usual crippled and other time tried antics intended to divert attention from the nest to her. These eggs are a very characteristic creamy white color and measure 2.40 x 1.69, 2.39 x 1.70, 2.40 x 1.71, 2.37 x 1.67, 2.31 x 1.70, 2.39 x 1.76, 2.36 x 1.73, 2.44 x 1.71, 2.45 x 1.70, 2.47 x 1.70, 2.29 x 1.67. Seven to fourteen eggs are laid. My Dakota correspondent informs me that this species very often lays eggs in the nest of the Canvas-back.

The birds feed on tender aquatic plants, *Vallisneria*, etc., also insects, frogs, tadpoles, marine surface swimmers in general. They are often mistaken for and recorded as Canvas-back Ducks from which they can readily be distinguished by the quite different shaped or proportioned bills.

✓ 147. *Aythya vallisneria* (Wils.). Canvas-back.

Plumage of adult male: head blackish on top, otherwise with neck reddish brown; chest, upper back, both tail coverts and lower rump black; rest of back finely barred with vermicular lines of black and white, *the white lines the wider*; belly white, barred with black below; flanks white, lightly barred with black or sometimes not barred. Plumage of adult female: cinnamon on head, neck and upper breast and back; the lighter throat and front of head somewhat rufous tinged; the grayish brown back and sides barred with vermicular white lines; belly white. Immature plumage similar. Wing 8.50 to 9.25; culmen 2.30; tarsus 1.60. The end of the more gradually tapering bill more flattened, and only slightly hooked, being quite different appearing from that of the Redhead.

Geog. Dist.—North America, very rare in New England; breeds from North Dakota, Oregon and Minnesota northward; winters from Chesapeake Bay to Cuba.

County Records.—Cumberland; taken at Cape Elizabeth and in Casco Bay, (Smith, F. & S. 20, p. 184); two adult males were taken at Cape Elizabeth in the fall of 1902, and were in my possession, (Lord). Kennebec; four were shot near Gardiner in the fall of 1895, one of which is in my possession, (Powers), this seen by me, (O. W. K.).

The Canvas-back is a rare bird in Maine, only eight specimens being known during the last twenty-five years. They straggle into the State in the fall migrations. Six to ten greenish tinged buffy white eggs are laid in a nest on the ground near a slough or grassy marsh, and are very characteristic in appearance, being readily distinguished from the eggs of the Redhead. Eight eggs from Benson County, North Dakota, June 25, 1897, measure 2.45 x 1.72, 2.44 x 1.74, 2.44 x 1.73, 2.45 x 1.77, 2.41 x 1.75, 2.45 x 1.75, 2.37 x 1.73, 2.47 x 1.79, 2.43 x 1.74. The very bulky nest was composed entirely of bullrushes and warmly lined with down from the breast of the parent. It was placed among rank green bullrushes on heavy dead undergrowth where the water was two feet deep.

Eggs of the Redhead are often found in the nest of this species and vice versa according to my correspondent and other persons. Though this Duck has attained a high reputation as a table bird by the so-called epicures, they are welcome to my share of Canvas-backs, mushrooms and other similiar trash. Though in winter this species is largely a salt water bird, in summer they frequent fresh water regions.

Subgenus FULIGULA Stephens.

148. *Aythya marila* (Linn.). Scaup Duck; Greater Scaup; Broadbill; Bluehead; Blackhead; Raft Duck.

Plumage of adult male: head, neck, breast and upper back black; wavy bars of white on back and scapulars; flanks, belly and speculum white; lower belly black barred; top of head with greenish reflections. Plumage of adult female and immature birds: white about base of bill; breast umber, margined

with ochraceous; head, neck and upper back umber, changing into fuscous brown on scapulars and lower back; belly and speculum white. Wing 8.25 to 8.75; culmen 1.90; tarsus 1.38.

Geog. Dist.—Northern part of northern hemisphere, breeding in the far north, and from Manitoba to Alaska; rarely breeding in Minnesota and North Dakota; winters from Maine (occasionally) but more commonly from Long Island south to South America.

County Records.—Androscoggin; (Johnson). Cumberland; common, (Brock); chiefly in April and October, (Brown, C. B. P. p. 32). Hancock; have a winter specimen from near Bucksport, it is common fall and spring, (Knight). Knox; winter, (Rackliff). Sagadahoc; quite common in fall, (Spinney). Waldo; flocks seen out in the bay in late October from which individuals taken were of this species, (Knight). Washington; not common, (Boardman).

This species usually occurs associated with its near relative, the Lesser Scaup, which latter seems far less common along our coast. The greater number of records are in fall, somewhat fewer in spring, March and April and October and November, the greater number wintering south of our coast and breeding entirely north of our limits. Six to ten olive gray eggs are laid. A nest found at Myvatu, North Iceland, June 21, 1895, contained five eggs measuring 2.46 x 1.72, 2.52 x 1.70, 2.38 x 1.77, 2.58 x 1.77, 2.51 x 1.70. The nest of grass lined with down was on the ground near a pond. Examination of stomachs of this species indicated that its principal food while with us consists of millions of small crustaceans of the surface swimming varieties, also many small mussels and mollusks. The birds usually occur in large flocks. This is the so-called American Scaup Duck of previous lists which has recently proved to be indistinguishable from European specimens.

149. *Aythya affinis* (Eyt.). Lesser Scaup Duck; Little Raft-Duck; Little Black-head; Little Bluebill; Greek Broadbill.

Plumage of adult males: head glossed with purplish; flanks with strong wavy black bars; otherwise not different from adult corresponding plumage of Scaup Duck but of smaller size. Plumage of adult females: smaller than female Scaup Duck; flanks heavily barred. Wing 7.50 to 8.15; culmen 1.70; tarsus 1.32.

Geog. Dist.—North America, breeding from North Dakota and Manitoba northward; wintering from Virginia south to Guatemala and the West Indies.

County Records.—Androscoggin; one at Sabattus Pond, Oct. 25, 1896, (Farrar). Cumberland; rare, (Brock); chiefly in April and October, (Brown, C. P. B. p. 32). Hancock; associated with the preceding, very rare, (Knight) Knox; rare in winter, (Rackliff). Washington; not common, (Boardman).

This species occurs along the coast associated with its near relative, the Scaup Duck, at similar seasons. It is not so common or generally distributed or else it has been overlooked along the Maine coast. Six to ten eggs are laid in a nest on the ground among the grass or rushes not far from some body of fresh water in its northern breeding grounds. Nine eggs found near a lake in Benson County, North Dakota, June 10, 1897, were pale olive buff in color and measure 2.21 x 1.53, 2.24 x 1.51, 2.22 x 1.54, 2.23 x 1.52, 2.12 x 1.54, 2.22 x 1.57, 2.17 x 1.52, 2.20 x 1.55, 2.20 x 1.53. The nest was composed of dried leaves, weed stalks and grass, warmly lined with down and was in a slight depression in the ground eight feet from the edge of the water. The female was flushed from beneath the horse's feet, according to my collector.

✓ 150. *Aythya collaris* (Donov.). Ring-necked Duck.

Plumage of adult male: chin white; head with bluish reflections, other wise with neck, breast, back, scapulars, and tail coverts black; a rather dimly defined chestnut collar on throat; speculum bluish gray; belly white, barred below with vermicular black; band across end of bill. Plumage of adult female and immature birds: speculum gray; top of head and back of neck dark brown; chest, sides and flanks fulvous brown; other upper parts dark brown; white or whitish at sides of head and neck; breast and belly white or lower down grayish brown; bill with band across end. Wing 7.25 to 8.00; culmen 1.85; tarsus 1.38.

Geog. Dist.—North America, breeding from Washington County, Maine, (rarely), and in the interior from Iowa northward; wintering from Virginia to Guatemala and the West Indies.

County Records: Cumberland; rare, has occurred between March 31 and May 1, (Brown, C. B. P. p. 32). Hancock; I have taken one specimen, (Dorr). Sagadahoc; F. T. Noble took a male in Merrymeeting Bay, October 11, 1905, (Noble, J. M. O. S. 1905, p. 32). Washington; not common, breeds, (Boardman).

As a very rare migrant this species occurs along the coast at the same seasons as the two Scaup Ducks, and it is very likely associated with them in the same flocks. In general habits, nest, eggs etc. it resembles the Lesser Scaup. Mr. Boardman once found this species breeding near Calais, but it has not been known to nest there lately. The eggs are said to measure 2.23 x 1.57, (Ridgway).

Genus CLANGULA Leach.

151. *Clangula clangula americana* (Bonap.). American Golden-eye; Whistler.

Plumage of adult male: loral patch circular, measuring less than half an inch in height along bill, white in color; head and upper neck glossy greenish black; neck, breast, belly, speculum, scapulars and exposed wing coverts white; speculum without black bar; otherwise plumage black. Plumage of females and immature: speculum white without black band; breast, belly, tips of wing coverts, and fore neck white; head and throat grayish umber; upper back, breast and sides gray. Wing 8.80 to 9.30 in males and 8.00 to 8.50 in females; bill from tip to extreme of frontal angle 1.90 in male, 1.70 in female; tarsus about 1.50 in male and 1.45 in female. The shape of the loral patch is sufficient to distinguish males of the two species, also the difference in color of the head, while the female Am. Golden-eye can be best told from the female of Barrow's Golden-eye by its lacking the dusky bar across the speculum, the difference in color of the head, the relation of nostril to rest of bill and a difference in the slope of the forehead, the feature last mentioned being best perceptible in specimens in the flesh. The presence or absence of the dark wing bar is generally sufficient to determine the species.

Geog. Dist.—North America, breeding from North Dakota and Maine northward; wintering from Maine south to Cuba.

County Records.—Androscoggin; common migrant, (Johnson). Aroostook; local summer resident, (Knight). Cumberland; winter resident, common, arrives in November, (Brown, C. B. P. p. 32). Hancock; common fall and spring along the coast, a few nest on inland ponds and streams, (Knight). Kennebec; (Dill). Knox; winter, (Rackliff). Oxford; breeds, (Maynard, L. B. C. Co. N. H. & O. Co. Me. p. 29). Penobscot; quite common fall and spring, some nest about the isolated ponds and lakes, a few remain about the swift open water at the Bangor dam and in similar places through some winters, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; quite common in winter, (Spinney). Somerset; common migrant, a male

seen June 23, 1896. (Morrell); breeds about the ponds and streams of the northern part of the county, (Knight). Waldo; November to April, (Knight). Washington; common resident, (Boardman).

This species is general along the coast from November until late March or April. Inland it is summer resident in limited numbers about various bodies of water in northern and eastern Maine, while in places on streams where the water is very rapid and does not freeze during the winter a few scattered individuals occasionally may be found. The nest is placed in holes in trees, usually near the water and six to twelve eggs are laid on a thick warm bed of down. The eggs are a very distinctive ashy green color. Twelve found May 29 were laid in a cavity in an oak tree near the water, on the usual bed of down from the breast of both male and female, judging from its color and appearance. These eggs measured 2.31 x 1.63, 2.25 x 1.60, 2.31 x 1.59, 2.32 x 1.70, 2.26 x 1.73, 2.33 x 1.70, 2.33 x 1.62, 2.25 x 1.71, 2.26 x 1.71, 2.25 x 1.70, 2.36 x 1.60, 2.33 x 1.52.

I have observed the newly hatched young with one or both parents accompanying them on various bodies of water in very late June or early July. The young swim quite deep in the water and in a compact group very close at the side or slightly in rear of the parent. Inland the food of the species consists very largely of the so-called fresh-water clams (*Unionida* and related species, formerly called *Unios*, but now scattered to the twelve points of nomenclature by the modern iconoclasts).

I have watched these birds fishing in the rapids and rips and repeatedly emerging with the mollusks they had obtained by diving. In such places they also eat a shiny vegetable substance of undeterminable nature. They also eat the smaller fish frequenting the region they call home and will not disdain trout fry on occasion. Along the coast practically the only food I have found in their stomachs consists of mussels and other mollusks which they obtain by diving and swallow bodily, shell and all. Their name of Whistler is derived from the whistling

sound of the wings made while flying. I have heard the parents utter a low-pitched quack to call their young.

152. *Clangula islandica* (Gmel.). Barrow's Golden-eye; Icelandic Whistler.

Plumage of adult male: head and throat glossy purplish blue; white loreal patch irregular, about five-angled and measuring about an inch along the part in contact with the bill; speculum crossed by dark bar; otherwise much as in the preceding species. Plumage of females and immature: color of head usually deep sepia; forehead rising rather more sharply in this species than in the preceding; nostril in middle of bill; otherwise much as in preceding species. Wing 9.00 to 9.50 in male, and 8.30 to 8.65 in female; bill from tip to extremity of frontal angle about 1.70 in male and 1.50 in female; tarsus about 1.55 in male and 1.40 in female.

Geog. Dist. — Northern North America, south in winter rarely to New York, Illinois, Utah and Virginia; breeds from the Gulf of St. Lawrence and Colorado northward and also in Greenland and Iceland.

County Records. — Hancock; rare winter resident, occurring chiefly in January and February, (Knight). Knox; winter, (Norton). Washington; common in winter, (Boardman).

This northern species occurs in Maine only along the coast in the very height of winter and seems to be more often found in especially cold winters than it does in milder ones. Washington County seems near the limit of its common occurrence, only comparatively small numbers straggling to Knox County. They occur usually in flocks associated with the preceding species, and a few can usually be found in such flocks on the lower Penobscot River, at Marsh Bay, in midwinter. The nest and eggs are reported by the authorities to be similar to those of the American Golden-eye, and the food seems to be the same as that of this species along the coast.

Genus CHARITONETTA Stejneger.

153. *Charitonetta albeola* (Linn.). Buffle-head; Butter-ball; Spirit Duck; Hell Diver; Devil Diver.

Plumage of adult male: band around head from eye to eye; lower neck, breast, belly, speculum and outer scapulars white; rest of head and neck glossed with purple, green and bluish; tail and upper coverts ashy gray;

back black. Plumage of female and immature: patch on each side of head; the speculum, breast and belly white; rest of head, the neck and upper parts in general grayish brown. Wing 6.50 to 7.00 in male and 5.75 to 6.00 in female; culmen 1.12 in male and 0.98 in female; tarsus about 1.25 in male and 1.12 in female.

Geog. Dist.—North America, breeding from Maine (exceptional) and Montana northward; wintering from Maine south to the West Indies and Mexico.

County Records.—Androscoggin; common migrant, (Johnson). Cumberland; rare in northern county, (Mead); common, (Brock). Franklin; rare migrant, (Sweet). Hancock; occasional coastwise, (Knight). Knox; winter, (Rackliff). Oxford; common visitant, (Nash). Penobscot; occasional in fall and spring, (Knight). Piscataquis; common migrant, (Homer). Sagadahoc; formerly plenty, now scarce, (Spinney). Waldo; occasional, (Knight). Washington; common spring and fall, breeds, (Boardman).

This sprightly little bird is general along the coast from late October until late April, while inland it is found in October and November and again in early May. It is not known to breed anywhere in Maine except in Washington County, and rarely there, there being no recent record. The nest is placed in a hollow tree or stump near a pond or stream, and is a mere lining of grass heavily reinforced by down. Six to twelve light buff eggs are laid which measure about 2.00 x 1.45 according to the authorities.

The birds hate to fly unless positively driven to it, in times of danger preferring to seek safety by diving. I have never heard the species utter any cry or call though they doubtless have some note. In inland regions they feed on chubs, shiners, small trout fry, and other small fish. Along the coast their diet is very similar. They dive at a gun shot almost as well as a Grebe.

Genus HARELDA Stephens.

154. *Harelda hyemalis* (Linn.). Old-squaw; Old-wife; South Southerly.

Plumage of adult male in winter: sides of head gray; rest of head, the neck and upper chest, upper back and lower belly white; dusky patch on each side of neck; back, breast and upper belly black; sides tinged pearl gray; yellowish band across end of bill; central tail feathers narrow, much

elongated. Plumage of adult male in summer: fore part of head grayish; white space back of eye; head, neck and upper parts, throat, breast and belly, black; scapulars margined with buffish; lower belly and sides white, the latter tinged with gray, otherwise as in winter. Plumage of adult female in summer: whitish space around eye and on each side of neck; head and neck blackish; feathers of the upper parts buffish margined, otherwise dusky brown above; lower parts white. Plumage of adult female and immature in winter: similar to that of summer female but sides of head and the neck white; scapulars and back margined with grayish; top of head dusky. The tail feathers of the female and immature are pointed but the central feathers are not so much elongated as those of the male. Wing about 8.40 to 8.80 in male and 8.00 to 8.40 in female; culmen 1.08; tarsus 1.30; tail about 8.00 in male and 3.00 in female.

Geog. Dist.—Northern hemisphere; in North America south to Virginia and more rarely to Florida and Texas; breeds in Arctic regions.

County Records.—Androscoggin; migrant, (Johnson). Cumberland; normally a winter resident, many individuals supposed to be crippled remain all summer, (Brown, C. B. P. p. 32). Hancock; common in winter and very rarely one in summer along the coast, (Knight). Knox; winter, (Rackliff). Oxford; rare visitant, (Nash). Penobscot; one shot at East Eddington, (Hardy). Piscataquis; rare migrant, (Homer). Sagadahoc; common in winter, have also seen it here in summer, (Spinney). Waldo; several large flocks in April 1883, (Howe, J. M. O. S. 1900, p. 28); regular and common from late November to March, (Knight). Washington; abundant, (Boardman).

This species occurs generally (locally common) along the coast from late November until late March. The few individuals which remain all summer along the coast are crippled or otherwise barren birds which never show any indications of breeding with us, and such as have been dissected by me were physically unable to breed. Inland during the migrations scattering individuals are recorded. The eggs are six to twelve in number and pale grayish olive. Seven from a nest of grass lined with down were taken at Myvatu, Iceland, June 13, 1897. The nest was on the ground among scrub birches on marsh land. The eggs measure 2.00 x 1.49, 2.03 x 1.45, 1.94 x 1.45, 2.00 x 1.48, 1.85 x 1.42, 2.03 x 1.50, 1.98 x 1.47.

They gather in good sized flocks, and when on the wing and at play in pleasant weather will take wing and fly in ascending circles until far up in the air, coming down in a quick flight.

When going from one feeding ground to another they fly swiftly some fifteen feet above the water, and if a flock is shot into often all will pitch headlong into the water, generally arising again immediately. When feeding they string out in a line, diving successively, one after another until all are down, and returning to the surface with small mussels or fish. They keep up a more or less constant calling to one another, the call being a prolonged succession of notes hard to put on paper.

Genus HISTRIONICUS Lesson.

155. *Histrionicus histrionicus* (Linn.). Harlequin Duck; Lord and Lady; Sea Mouse.

Plumage of adult male in winter: following parts white, lores, stripe at each side of crown, stripe each side down rear of neck, spot over ears, collar around neck, bar each side on breast, middle of scapulars, most of tertials, spot at tip of greater wing coverts, spot each side near base of tail; sides, flanks and stripe each side of crown rufous; speculum metallic violet; otherwise bluish plumbeous. Plumage of adult male in summer: speculum without gloss, brownish gray; below grayish white, grayish brown spotted; otherwise much as in winter but generally duller colored. Adult female: white spot on ears and front of head whitish; above brownish fuscous, growing lighter on throat, breast and sides; belly grayish brown. Immature plumage: chest, flanks and under tail coverts brownish; above uniform brownish; otherwise much as in adult female. Wing 7.50 to 8.25; culmen 1.07; tarsus 1.52.

Geog. Dist.—Eastern North America, breeding from Newfoundland, Montana and Latitude 38° in the Sierras northward to Arctic regions; in winter southward to the Middle States, California, and Eastern Asia.

County Records.—Cumberland; rare winter visitant, (Brown). Hancock; formerly common among the outer islands, but at present only a few pair can be found in the most isolated outer portions of Penobscot Bay, (Knight). Knox; winter, (Rackliff). Sagadahoc; rare in winter, formerly plenty, (Spinney). Waldo; only one or two instances in the bay in the last twenty years, (Knight). Washington; among the islands in fall and winter, (Boardman).

The days of this handsome little Duck are fast passing and it is likely soon to be accorded a shelf along with certain other species formerly occurring along our coast. They were formerly common along the coast from November until March and April, but now occur only in the extreme winter months in

limited numbers among the outer surf beaten ledges and islands of our eastern coast. It seems very likely that 200 individuals would be a very liberal estimate of the numbers which visit our entire Maine coast in winter.

They feed among the breakers, diving through the waves and seemingly thoroughly enjoying life when unmolested. They feed on mussels and other mollusks which they obtain by diving. Their call note is a peculiar whistling sound which the fishermen have imagined was somewhat mouse like, whence probably the name Sea Mouse. In the nesting season they resort to inland localities, placing the nest near to running water, either on the ground or in hollow stumps and trees. Seven eggs were taken at River Saxa, North Iceland, June 21, 1896, and are now before me. They are greenish yellow in color and measure 2.35×1.57 , 2.30×1.64 , 2.27×1.60 , 2.28×1.62 , 2.25×1.65 , 2.25×1.60 , 2.27×1.58 . The nest composed of grass, lined with down, was well concealed among plants on the river bank according to the collector.

Genus CAMPTOLAIMUS Gray.

156. *Camptolaimus labradorius* (Gmel.). Labrador Duck; Pied Duck.

Plumage of adult male: "Head, neck, chest, scapulars, and wings (except quills) white; rest of plumage, including stripe on top of head and broad ring around neck, deep black; stiffened feathers of cheeks brownish white." (Ridgway). Plumage of adult female: "Uniform brownish gray, the wings more plumbeous; tertials silvery gray, edged with blackish; secondaries white, primaries dusky." (Ridgway.) Wing 8.70; culmen 1.65; tarsus 1.55 (average of Ridgway's measurements).

Geog. Dist.—Formerly Northern Atlantic coast from New Jersey (in winter) northward; breeding from Labrador northward; now extinct, (A. O. U. Check-list).

County Records.—None, the species being admitted to the list upon the evidence of Audubon (Orn. Biog. 4, p. 271) where he writes:—"It is surprising that this species is not mentioned by Dr. Richardson in the Fauna Boreali Americana, as it is a very hardy bird, and is met with along the coasts of Nova Scotia, MAINE (capitals mine, O. W. K.) and Massachusetts, during the most severe cold of winter."

There seems no doubt but that the species formerly occurred as a winter bird along the Maine coast. The last known individual taken was secured at Grand Menan, New Brunswick, in 1871. Forty-two specimens are on record as being preserved in various collections. It seems hard to explain why this species should become extinct as it was not considered especially desirable as a table bird. Possibly it may have been exterminated by some peculiar distemper or disease which attacked it in its breeding grounds.

Genus SOMATERIA Leach.

Subgenus SOMATERIA.

159. *Somateria molissima borealis* C. L. Brehm. Greenland Eider; Northern Eider.

Plumage of adult male: head black on top, and with greenish white line on crown; a greenish tinge to sides and back of head; upper breast, back, throat, neck, rest of head, and lesser wing coverts white; middle of rump, tail coverts, belly and adjoining breast black. Plumage of adult female and immature: the whole general plumage is a mixed barring or margining of the feathers with buffy ochraceous and dusky or black, the head, throat and neck being streaked with the black, while on the other parts the markings are more like wavy interrupted markings running crosswise. In any plumage the birds belonging to this species may be told by the narrow pointed ending or angle made by the bare arms of the V space on top of the bill. Wing 10.50 to 11.50; culmen 2.15; tarsus 1.95.

Geog. Dist.—Northeastern North America and Greenland, south in winter rarely to Maine and more rarely to Massachusetts.

County Records.—Cumberland; I have one which was taken in Casco Bay, April 6, 1903, (Lord). Knox; rare in winter, (Rackliff). Sagadahoc; one specimen, a male, (Spinney).

Only a very few of these birds straggle southwards to our coast in winter, at which time they are usually associated with flocks of their near relatives, the American Eiders, with which they are closely identified in food, habits, etc. They nest in colonies on some of the islands off the northern coast of Labrador, laying four to eight eggs of a pale greenish olive color. Four eggs from near Cut-throat, Labrador, July 7, 1897, were

in a nest which was a mere hollow in a tuft of *Carex*, and the eggs were very warmly enveloped in down. These eggs measure 2.97 x 2.00, 2.73 x 1.93, 3.09 x 2.00, 3.20 x 2.00.

In many localities the Eiders nest in large colonies, being almost semi-domesticated. The down is regularly gathered as an article of commerce by the Greenlanders and Icelanders, while the eggs are also locally used for culinary purposes. The males are said to separate from the females and young as soon as the breeding season is over and to congregate by themselves in large flocks (Kumlien).

160. *Somateria dresseri* Sharpe. American Eider; Eider Duck; Sea Duck.

Plumage of adult and immature birds is practically identical with the plumages described under Northern Eider; the chief, and in fact only real reliable means of distinguishing the two species is the difference in shape of the V-shaped angles made by the bare space on the top of the bill, these being very *broad* with rounded angles in this species. Wing 10.50 to 11.50; culmen 2.15; tarsus 1.80.

Geog. Dist.—Atlantic coast of North America, nesting from Jericho Bay, Maine, to Labrador; in winter south to Delaware and west to the Great Lakes.

County Records.—Cumberland; common in winter, (Lord). Hancock; at present probably not exceeding seven or eight pairs of birds nest on the various small islands between Isle au Haut and Little Duck, though in winter resident, (Knight). Knox; winter bird, (Rackliff.) Sagadahoc; common in winter, (Spinney). Waldo; the species is still found in winter and not rare, (Knight). Washington; abundant in winter, (Boardman); Old Man Island, off the coast of this county, has recently been leased by the Audubon Society to be kept as a preserve for nesting seafowl, and this island is reported to be the breeding place of several pair of Eiders as well as of other seafowl.

It is very probable that not more than twenty pair of these birds still remain to nest along the entire eastern coast of Maine, though formerly many nested within the same limits. As a winter bird from November until April the species still occurs generally among the outer islands and along the coast. The nests are built on the ground among rocks or concealed under tufts of vegetation on various small rocky islands.

Among the breeding places in Jericho Bay are Spirit Ledge, Green Island, Saddleback Ledge, Halibut Ledge and Hardhead Island, and at present about seven pair of birds nest on the various islands enumerated. Formerly a small colony of five pair nested on Spirit Ledge which is a small rocky island on which grow a few clumps of *Heracleum* and *Ligusticum*.

A nest from Hardhead, June 20, 1896, contained five eggs of a pale greenish olive color. The eggs were laid in a nest of grass, and were imbedded in and entirely covered with down. They measure 2.99×2.07 , 3.05×2.01 , 3.04×2.06 , 3.11×2.04 , 3.09×2.08 . The female was almost stepped upon before she left the nest. Four eggs from Saddleback Ledge, June 26, 1895, measure 3.05×2.10 , 3.17×2.05 , 3.06×2.05 , 3.16×2.05 . This nest was in the very short grass and the eggs were entirely covered with and rolled up in down, so that the entire affair looked like a mass of rubbish the nature of which was accidentally disclosed by curiosity impelling me to ascertain the cause of this odd mass. A number of pair of birds had left this island at our approach and though there were several nests the birds were absent from all. Three to seven eggs are sometimes laid, but four or five seems to be the more usual number on our coast, and if these be taken the bird will lay more. Nests with fresh eggs contain the minimum amount of down and this is added to as incubation progresses. The birds are expert divers and feed in or near the surf in the roughest places. They eat mussels, clams and other small mollusks, *Pentacta frondosa* and starfish while in some cases small fish are also eaten. They are often observed perched on the rocks or shore of the islands where they are nesting. While they usually build their own nest I have observed instances where the nest of the Herring Gull had been appropriated and lined with down, but in such cases it seemed likely that the birds were laying again after being once robbed. When flushed from the nest the female flies away crying "kuk, kuk, kuk". The call of the male bird in the mating season is "a-o-wah-a-o-wah".

Mr. C. F. Winch mentions seeing two or three pair of these birds with young off Saddleback Ledge in July, 1907, which proves that they are yet breeding in Jericho Bay, and adult Eiders were seen by him elsewhere.

Subgenus ERIONETTA Coues.

162. *Somateria spectabilis* (Linn.). King Eider.

Plumage of adult male: head bluish gray, changing to greenish on cheeks; neck, upper back, sides of rump and wing coverts white; front and sides of breast creamy buff; the space about base of upper mandible, a distinct large V mark on the throat, the scapulars, secondaries, tertials, primaries and coverts, pelvic region of back, tail and coverts, sides and under parts black; scapulars washed with slate; the most mature plumage of the male bird of this species has been stated by Mr. Norton to be indicated by the modification of the outer tertials into a peculiar downward curve of the shafts and a great production of the barbs of the outer web; in the specimen he describes I would best describe this modification as producing a tuft like bunch of feathers on each wing; most King Eiders taken are not mature enough to more than faintly show this modification. Plumage of adult female: head ochraceous, streaked with black; throat buffy ochraceous; back black, the feathers rufous and ochraceous margined; below washed or barred with brownish gray, rufous, ochraceous and dark, not greatly different from the females of the other species. Immature plumage: similar to female plumage, but the immature males sometimes show an outlined dark V on their throats previous to taking on other adult characters. Wing 10.50 to 11.50; culmen 1.25; tarsus 1.83.

Geog. Dist.—Northern parts of northern hemisphere, breeding from Gulf of St. Lawrence northward; wintering south as far as Long Island and the Great Lakes; casual in Virginia and once in Georgia.

County Records.—Cumberland; rare in winter, (Lord). Knox; winter, (Rackliff). Sagadahoc; three specimens in ten years, (Spinney). Washington; not rare in winter, (Boardman).

Though of general occurrence along the coast from December until late March and even mid April, this species is usually quite rare with us. They are said to feed in rather deeper water than the other Eiders, and Mr. Norton has recorded the fact that certain individuals had been eating sea-cucumbers (*Pentacta frondosa*) to the practical exclusion of other material. While a few I have examined also evidenced some fondness

for such a diet they also had been eating great quantities of mussels.

Three eggs from Saunder's Island, North Greenland, Peary expedition of 1891, are in my possession. The nest was on the ground and was made entirely of down; internal diameter seven and three-quarters inches and external diameter sixteen inches. These eggs contained feathered chicks when found. They are grayish green in color and measure 2.80 x 1.92, 2.66 x 1.89, 2.80 x 2.00.

Genus OIDEZIA Fleming.

Subgenus OIDEZIA.

163. *Oidezia americana* Swains. American Scoter; Black Coot.

Plumage of adult male: bill black, except base of and knob on upper mandible which are orange; feathers at side of bill not extending beyond corner of mouth; plumage black. Plumage of adult female: dusky brown above, the feathers of the back paler tipped; below paler grayish brown. Immature plumage: like the female, but indistinctly barred beneath with grayish brown. Wing 8.50 to 9.50; culmen 1.70; tarsus 1.80.

Geog. Dist.—Coasts and larger bodies of inland waters of northern North America; breeds in Labrador and the northern interior; winters southward to New Jersey, Great Lakes, Colorado and California.

County Records.—Androscoggin; fairly common migrant, (Johnson). Cumberland; common, (Brock). Hancock; common in fall, winter and spring, rare in summer, never breeds here, (Knight). Kennebec; have seen one shot near Gardiner, (Knight). Knox; resident, (Rackliff). Penobscot; not rare in fall on the larger ponds and lakes, (Knight). Sagadahoc; seen the year around, (Spinney). Waldo; common in fall, winter and spring, a few in summer, (Knight). Washington; common, (Boardman). York; (Butters).

This is one of our commonest and most generally occurring Ducks along the coast in fall and spring, and quite often seen in winter. A few remain throughout the summer but do not breed, and those examined have been in no condition to do so. Along the coast they obtain their living by diving, feeding on mussels, clams and other mollusks; inland on the ponds they

likewise prefer *Unios*. In spring and fall they are in large flocks, sometimes numbering hundreds, while at other times they are more usually in smaller bands of ten to twelve. In their breeding grounds of the north they are reported to nest inland about the ponds, lakes and marshes, while in Alaska they are said to nest in similar situations to the Eider Duck. The eggs are said to be from six to ten in number, and of a pale buff color. They measure about 2.55 x 1.80.

Subgenus MELANITTA Boie.

165. *Oidemia deglandi* Bonap. White-winged Scoter; White-winged Coot.

Plumage of adult male: swollen base of upper mandible entirely feathered, the sides of bill orange; speculum and spot behind eye white; otherwise black in plumage; feathers on bill reaching much beyond corner of mouth. Plumage of immature male; grayish brown, lighter below and with a white patch on ears and whitish at base of bill; speculum white. Adult and immature female plumage: like the immature male but without the whitish spots on ears and near bill. Wing 10.50 to 11.50; culmen 1.55; tarsus 1.95.

Geog. Dist.—Northern North America, breeding in Labrador and the fur countries; south in winter to Virginia, Illinois and California.

County Records.—Androscoggin; fairly common migrant, (Johnson). Cumberland; common, (Brock). Hancock; common in fall, winter and spring, not rare in summer, (Knight). Knox; resident, (Rackliff). Penobscot; a small flock seen near the mouth of Pushaw Pond in late April, 1896, (Knight). Sagadahoc; seen the year around, (Spinney). Waldo; common from fall to spring, a very few in summer, (Knight). Washington; common, (Boardman).

A very common and generally occurring species along the coast in fall and spring, not rare in winter and likewise seen through the summer but never breeding. Audubon found this species nesting in Labrador in early June, placing the nests under low bushes on the ground near small lakes. The nests were made of twigs and plants, lined with some feathers but no down. The eggs are six to ten in number, measuring about 2.68 x 1.83.

Perhaps the best account of the three species of Scoters along the Maine coast which has ever appeared or ever will appear was



WHITE- WINGED SCOTER.

Captive Bird, Photograph by Walter Rich, Portland. Kindness of The Journal of the Maine Ornithological Society.

written by Captain H. L. Spinney and published in the *Maine Sportsman* for May, 1897, from which it has been widely copied. Capt. Spinney says: "There are no sea birds more intently watched during the migration period than the White-winged Scoter, American Scoter and Surf Scoter. Twenty years ago, during the spring flight which usually lasted from April first to the last of May, and again during the fall migration lasting from September first to the end of October, these Ducks could be found all along the coast of Maine in large flocks called "beds" from their habit of congregating in vast numbers on their feeding ground.

All along our coast are sunken rocks, some of which appear at low tide while others are covered with water from ten to fifty feet deep. On these submerged rocks grows a bivalve known as mussels. These occur in vast numbers and form the principal article of food of the Scoter Ducks. To obtain these the Ducks dive and tear them from the rocks.

The observations of which I shall speak have been made between the east boundary of Sheepscot Bay and the west of Casco Bay, but I think they will apply to all the Maine coast at the present time. If we would observe the habits of these birds we must make our preparations the night before, which will consist of a good row-boat and a dozen decoys made of wood and painted black, or small buoys painted black will do very well, especially if it be in the fall, and an anchor and line to hold the boat in position. Having made these preparations, and having located the bedding ground which we wish to visit, we will wait for morning.

My experience has been that these nights are at least forty-eight hours long, but, like everything else, they come to an end. As it is three A.M. and we have some three or five miles to row if we want to be on the shoal by daylight we must start. It is a quiet morning in May. Not a ripple disturbs the surface of the water. All nature seems quiet, unless the frogs from some small ponds may be heard singing their

plaintive chorus, or occasionally the chirp of a small bird awakened from its night's repose by some intruder. As we step into our boat and leave the shore how the sounds echo on the quiet morning air. These are mornings never to be forgotten. As we row along day dawn begins to appear, the Robin is heard from some tree top singing — for rain we should say if it be a cloudy morning. Soon the Song Sparrow is heard and now the world in general seems waking up.

But here we are on the grounds and we must get our decoys out. These are all fastened two or three feet apart to one long line by a short line from each decoy, called a lanyard. On one end of this main line we will tie a rock to hold the whole on the bed, and after the decoys are all in the water we will bring the last end up in line with the first, so as to form a half circle, and anchor it as we did the first, after which we move away from them about twenty-five yards and anchor the boat.

Now we are ready and as daylight increases we begin to see the different kinds of sea-fowl moving to their several feeding grounds. But here comes a flock of Ducks straight in from the sea where resting on the water they have drifted a number of miles during the night with the current. How eager they look as they see our decoys which they suppose to be their associates of the day before. If we do not shoot at them they will light with the decoys or close by them. Soon, however, they recognize the deception and swimming with their necks stretched to their utmost length, take wing and fly away. And so they will come and go in flocks or from three or four to twenty-five or more; or perhaps two and quite often only one will be seen at intervals until ten o'clock, when if shot at during the time they will light on some other bed, a few returning all through the day to see if we have left their bed or if their comrades are feeding there.

Should it be in October, when the young birds are going south, no amount of shooting will discourage them, and I have known

the same flock, after being shot at to leave the decoys, fly a short distance and return the second and third time, although half or more of their number might be dead or wounded.

I have let the young birds alight with the decoys and watched to see what they would do. After sitting still a few moments, some of them would edge up to a decoy sidewise, but just before the instant for touching it they would find out their mistake, when they would jump sidewise, with a look which would seem to say, "You are a little off size and color, where did you come from?" Again I have seen them swim up to a decoy and peck at it, and when their bill struck the wood there would be another expression too ludicrous for anything. Then I should like to have been a good bird mind reader.

During the spring flight, if a male and female come to the decoys and you kill the male and the female goes clear, she will always return for the male, though the male will rarely if ever return for the female. The gunners knowing this, if they have to take chances on a pair of birds always shoot the male first, for they know that the female will return, and they will be quite sure to get her.

Another peculiarity common to both the White-wing and Surf Duck is this: if they pass between your boat and the land too far away to shoot, screech at them and they will always turn off from the land towards you. When they are too shy to come to decoys the gunners take advantage of them in this way. While all three species are the same in their other habits, I have never known of the American Scoter being taken in this way, although I have tried it many times, for they go on their way as if nothing had happened.

There may be miles of water with many shoals and nothing to mark the position of their accustomed feeding grounds, and though the birds have drifted all night with the current, yet however dense the fog they will always fly direct to the particular shoal on which they have been in the habit of feeding, notwithstanding the fact that there are plenty of other shoals

in the vicinity; for each particular flock of Ducks, if it contains twenty-five only or numbers hundreds, invariably returns to the same shoal unless worried too much, when they will select some other. And so at the time of which I write, all along our coast on any morning in the months named, they can be seen by thousands. Acres of water will be black with them and flock after flock leave for more northern feeding grounds, while others are just arriving from the south.

Now let us start some morning at the present time (March) under favorable circumstances and see what we will find. Perhaps not a shoal at all for miles is occupied, and if at all with only a few stragglers. But let us go to some headland that makes out into the sea beyond all others, put out our decoys and watch the result. About sunrise the Ducks will begin to fly. Their numbers vary from a single bird to three and eight and sometimes fifteen, but the last will be the exception. If you stop through the day, you might count fifty such flocks or see only a dozen, and even less than that.

Instead of being a few yards above the water as they used to fly, they will be out of gunshot up in the air, and when they notice the decoys instead of trying to reach them as formerly, they will double their exertions to put the greatest possible distance between them. This will not apply to every flock, yet the majority will do it. Whereas they used to come as near as could be wished to shoot with a gun, now you need a cannon, and you must be very careful or you will strain that. And is this to be wondered at, when on any favorable morning in the months mentioned, from one to eight boats with decoys may be found off every headland along the migration route with every flock that comes along meeting the "bang!" "bang!" the whole length of our coast.

In spring if the wind is favorable, they will not stop or even come in sight of land here, but will fly straight from Cape Cod to some distant point east. The fall of '96 was favorable for birds, as the prevailing winds were northeast during the flights.

I do not think I saw one thousand of these Ducks during the fall and I had letters from friends as far east as Mt. Desert complaining of the same thing. My brother, who worked at the Delaware breakwater, at Cape Henlopen, the past summer, says the Scoter Ducks there are just as tame as they used to be here and fed all around the vicinity where they were at work and did not mind the boats only to get out of the way. 'They do not gun them south and the same birds which are so shy on the New England coast evidently feel a security in that locality which they do not enjoy on our coast. I will mention another point in their migration. About the sixth of April the first flight of American Scoters comes and ten days later the Surf Ducks. About the first of May the White-winged Scoter appears, and although there may be scattering birds of each kind during all the time, you will not see any flocks only as the flights come, and in the flight proper I have never seen the species together unless the immature birds, and even then I do not remember of ever seeing all three species at once.' (Herbert L. Spinney.)

Subgenus PELIONETTA Kaup.

166. *Oidemia perspicillata* (Linn.). Surf Scoter; Bald-headed Scoter; Sea Coot; Butter-billed Coot.

Plumage of adult male: a pure white patch on the forehead and another on hind neck; bill orange yellow with swollen portion bare of feathers; a circular black spot on side near base of bill; plumage otherwise black. Plumage of adult female and immature: whitish at base of bill and on the ears; upper parts dusky; throat, breast and sides grayish brown; belly white; the feathers of the breast and sides are often tipped with lighter. Wing 9.20 to 9.80; culmen 1.45; tarsus 1.70.

Geog. Dist.—Coast and larger inland waters of northern North America; breeds from Gulf of St. Lawrence northward; in winter south to Florida and Lower California.

County Records.—Androscoggin; (Pike). Cumberland; common, (Brock). Northern Cumberland; somewhat rare visitor, (Mead). Franklin; rare migrant, (Richards). Hancock; common in fall and spring and occasional in winter, a few also in summer, (Knight). Knox; resident, (Rackliff).

Oxford; visitant, (Nash). Penobscot; a few straggle into the larger lakes in fall, (Knight). Piscataquis; rare, (Homer). Sagadahoc; seen the year around, (Spinney). Somerset; flock of nine seen in September, 1895, one shot by H. H. Johnson, (Morrell). Waldo; occasional in fall and winter, a few in spring and summer, (Knight). Washington; common, (Boardman).

Like the other Scoters this species occurs along the coast in fall and spring in flocks, scattering bunches remain all winter, and some few stay all summer but do not nest. The nest is placed on the ground in fresh water marshes or near some pond or lake, being made of grass and weeds, lined with down. Five to eight pale buff eggs are said to be laid and their measurements are about 2.31×1.63 .

Genus ERISMATURA Bonaparte.

✓ 167. *Erismatura jamaicensis* (Gmel.). Ruddy Duck; Sprig-tail; Dipper.

Plumage of adult male: tail feathers very stiff, pointed; upper tail coverts exceedingly short; throat, back and neck reddish chestnut; top of head black; side of head below eyes white; below glossy whitish, often with a more or less rusty tinge to ends of feathers, this wearing away and leaving the entire plumage below white. Plumage of adult female and immature: above grayish brown, mottled or wavy barred with buffy; sides of head and the throat grayish white; a brownish stripe from corner of mouth to ear coverts; other under parts silvery white. Wing 5.70 to 6.10; culmen 1.55; tarsus 1.17.

Geog. Dist. — Entire North America, breeding locally throughout its range, but more commonly in the northern latitudes; south in winter to the West Indies and Central America.

County Records. — Androscoggin; fairly common migrant, (Johnson). Cumberland; common, (Brock). Hancock; rare migrant, (Knight). Knox; transient visitor, (Norton). Penobscot; occasional, (Hardy). Sagadahoc; few fall and spring, (Spinney). Washington; not rare, breeds, (Boardman). York; I have seen a specimen from the town of York, (Norton).

This species occurs chiefly as a fall and spring migrant, never being especially common. While it is more general along the coast in October, November, and less frequently in April and May, it may be expected locally throughout the State at these seasons. With us it has been reported as breeding only in Washington County. The nest is almost always built either

close to the waters edge or actually floating on the surface, and it is composed of grasses, rushes and sedges lined with down. Six to ten buffy white eggs with a very peculiar papillose or granulated surface are laid, and these eggs are most wonderfully large for the size of the bird. Seven from Salinas, California, April 26, 1894, were in a floating nest of tules lined with down which was fastened to living tules in a slough. These eggs measure 2.48 x 1.85, 2.51 x 1.83, 2.54 x 1.84, 2.43 x 1.79, 2.45 x 1.81, 2.46 x 1.85, 2.55 x 1.80. In Maine the nesting season is in June. They usually occur in small flocks, not over five to ten at the very outside, and nest in small scattered colonies. Their food is of an animal nature, in part at least, consisting inland of aquatic larvae and water insects, small fish and the like. I know nothing of what they eat on the coast.

Subfamily ANSERINÆ. Geese.

Key to the species of ANSERINÆ.

- A. Bill yellow or yellowish.
 - 1. Head and neck brown.
 - a¹. Rump fuscous, nail of bill black. Am. White-fronted Goose. (Immature, see Hypothetical List).
 - a². Rump gray, nail of bill yellow. Blue Goose. (Immature, see Hypothetical List),
 - 2. Forehead, or forehead and head both white.
 - §. Forehead only white. Am. White-fronted Goose. (Hypothetical List).
 - §§. Whole head white.
 - ? Primaries black, otherwise plumage wholly white.
 - a¹. Bill under 2.40; wing under 17.10. Lesser Snow Goose.
 - a². Bill over 2.40; wing over 17.10. Greater Snow Goose.
 - ?? Back grayish brown.
 - a¹. Wing coverts not conspicuously white margined; rump and belly gray. Blue Goose. (Hypothetical List).
 - a². Wing coverts widely and prominently white margined; rump and belly whitish.
 - b¹. Bill under 2.40; wing under 17.10. Lesser Snow Goose. (Immature).

b². Bill over 2.40; wing over 17.10. Greater Snow Goose (Immature).

B. Bill black.

1. Throat black. Brant.

2. Throat white.

a¹. Length from tip of bill to tip of tail over 34.00; wing usually more than 16.00; culmen usually more than 1.75; tail feathers usually 18 to 20 in number. Canada Goose.

a². Length from tip of bill to tip of tail under 34.00; wing usually less than 16.00; culmen usually less than 1.75; tail feathers usually 14 to 16 in number; Hutchin's Goose.

Genus CHEN Boie

169. *Chen hyperborea* (Pall.). Lesser Snow Goose; Baily Goose.

Plumage of adults: primaries black, their bases and coverts ashy; plumage elsewhere white. Immature plumage: head, neck and upper parts pale grayish; feathers of the back often with whitish edges; the wing coverts and tertials streaked towards the middle with darker; rump, tail coverts, tail and under parts white; wing coverts widely white-margined. Wing 14.00 to 17.00; culmen 2.00 to 2.30; tarsus 2.90 to 3.30.

Geog. Dist.—Western North America, east to the Mississippi Valley and more casually to New England; south in winter to southern Illinois and southern California; breeds only in high latitudes.

County Records.—Cumberland; taken in December, 1880, (Brown, C. B. P. p. 30). Hancock; very rare, one taken at Toddy Pond, October 4, 1893, which I sold to Mr. Brewster, (Dorr). Kennebec; taken at Hallowell on November 25, 1881, (Smith, F. & S. 20, p. 125). Oxford; a specimen was taken at Lake Umbagog, Maine, October 2, 1906, by Chas. Douglas, (Brewster, Auk, 1897, p. 207). Penobscot; have one shot at Pushaw and saw one shot at Niatous, (Hardy). Sagadahoc; one was shot about three miles from Richmond, October 10, 1897, by James Robinson, and a companion which the bird had was shot later by Capt. Scofield; one of these birds is now in the Bowdoin College collection, (C. B. Day).

This species occasionally straggles into the State in the fall between early October and December. They are said to nest along the Lower Anderson River and in neighboring regions along the Arctic coast. The egg is described as uniform dirty chalky white and measuring 3.40 x 2.20 (B. B. & R.). The nesting and feeding habits are likely to be similar to those of other related species.

169a. *Chen hyperborea nivalis* (Forst.). Greater Snow Goose.

Plumage: not different from the corresponding plumages of the Lesser Snow Goose, and distinguished only its larger size. Wing 17.00 to 17.50; culmen 2.40 to 2.70; tarsus 3.20 to 3.40.

Geog. Dist. — North America, breeding east of the Mackenzie Basin in the far north and wintering from Chesapeake Bay to Cuba: rare or casual along the New England coast.

County Records.—Sagadahoc; a female which was received in the flesh by Mr. Chas. Batchelder of Cambridge, Massachusetts, was shot on Heron Island at the mouth of the Kennebec River, April 7, 1890, (Batchelder, Auk 7, p. 284; also A List of Birds of Maine, p. 36); a male taken at Back River, Georgetown, April 25, 1903, by Winfield Todd is in my collection, (Spinney).

This species is a mere spring straggler to our coast, the two specimens known coming from substantially the same locality within a few miles. The nest, eggs and habits of these birds are veiled in obscurity.

Genus *BRANTA* Scopoli.

172. *Branta canadensis* (Linn.). Canada Goose; Wild Goose.

Plumage of adults: throat and patch on head behind the eyes white; rest of head, neck, chin, tail and upper tail coverts black; longer and lateral tail coverts, lower belly white; sides, back and wings brownish, the feathers lighter edged; breast and belly grayish white. Immature plumage: differs chiefly in that the throat and cheeks are in part black. Tail feathers eighteen to twenty in number. Length from tip of bill to end of tail (to be measured only in specimens in flesh) 34.00 to 40.00; wing 16.00 to 20.00; culmen 1.75 to 2.50; tarsus 2.50 to 3.50.

Geog. Dist.—Temperate North America, breeding in many of the northern states (rarely now) and in the British Provinces; wintering south to Mexico.

County Records.—Androscoggin; common migrant, (Johnson). Cumberland; common transient, arrives in early March,—sometimes even late in February,—and straggles along until the latter part of May, re-appearing about the middle of October and staying until in December, (Brown, C. B. P. p. 30); migrant, (Mead). Franklin; common migrant, (Richards). Hancock; quite common in fall, common in spring, (Knight). Kennebec; migrant, (Gardiner Branch). Knox; migrant, (Rackliff). Oxford; common migrant, (Johnson). Penobscot; common in flocks overhead in spring and fall, (Knight). Piscataquis; migrant, (Homer). Sagadahoc; common in migration, (Spinney). Somerset; not common migrant, (Morrell). Waldo;

common spring and fall migrant, (Knight). Washington; common, (Boardman); common only in spring and fall migration, (Clark). York; rare migrant, (Adams).

The vast majority of the Wild Geese are seen as they fly overhead in their wedge-shaped flocks, led by some old wary gander, but an occasional flock will alight to feed or when puzzled by the weather conditions. They may be seen from late February until well into May, and again in October, November and even December. There seem to be no instances known of their ever having nested in Maine.

Four to seven buffy white eggs are laid in a nest which is variously situated on the ground on a prairie, among rushes on the bank of a pond, river or lake, or even in a deserted Hawk's nest in a tree (rarely). Seven eggs from Pierce County, North Dakota, May 5, 1897, measure 3.63 x 2.32, 3.39 x 2.35, 3.56 x 2.44, 3.53 x 2.43, 3.40 x 2.43, 3.43 x 2.29, 3.50 x 2.47. The nest was a mass of rushes lined with dried rushes and much down and it is before me as I write. It was stated by the collector to have been placed on the ground among a heavy growth of rushes on a small island in a lake.

The cry uttered when on the wing is a clear trumpet like "honk" seemingly uttered by various individuals in the flock. When the weather is foggy their "honk" seems uttered more frequently and in a querulous tone. When a flock has alighted and is sporting in the water without apprehension of trouble, they swim gracefully about plunging their heads and necks under the water to feed. Now and then some lusty or exuberant individual, (probably a gander), will stretch itself up in the water, flap its wings over its back, and utter a series of resonant honks, the first loudest, longest drawn out and highest pitched and gradually lessening in loudness and length and decreasing in pitch, about as follows "h——o——n——k——, h——o——n——k——, h—o—n—k—, h-o-n-k-, honk, onk, uf," the last note being a mere expelling of the breath. This proceeding I have only observed with one flock, never

having been able to observe others while they were unconscious of my whereabouts and feeding, but judge that it is a characteristic habit.

They feed on various berries that are abundant in the far north, and in sections of the west they eat grain when obtainable. The stomachs of many spring specimens I examined proved to contain only large quantities of grass, roots and stubble, and much *white* sand.

172a. *Branta canadensis hutchinsii* (Rich.). Hutchin's Goose.

Plumage: the only practical difference in plumage is that in this subspecies the tail feathers are only 14 to 16 in number; the measurements of the birds are smaller. Length (in birds in flesh) 26.00 to 34.00; wing 15.00 to 16.00; culmen 1.20 to 1.75; tarsus 2.25 to 3.00.

Geog. Dist.—North America, breeding far north and migrating south in winter through the western United States; also northeastern Asia; casual in Maine.

County Records.—Cumberland; Dr. H. H. Brock of Portland has a specimen which was taken at Cape Elizabeth, November 13, 1894, (A List of Birds of Me. p. 37; also F. & S. 20, p. 125); three received in the spring of 1899 from this vicinity, (Portland) (Lord). Franklin; I have seen a specimen said to have been shot in the Rangeley region, (Brock).

This subspecies is a mere straggler or casual migrant, appearing at the same seasons and usually associated with flocks of the Canada Goose. The habits are similar but eggs are said to average smaller, one measuring 2.90 x 2.07.

173. *Branta bernicla* (Linn.). Brant.

Plumage of adults: neck black, sprinkled with white at the sides; head, throat and upper breast black; belly and longer and lateral tail coverts white; lower breast and sides grayish; back brownish gray with the feathers tipped with lighter. Immature plumage: secondaries white-tipped, forming conspicuous bars; white on neck in small specks. Wing 12.00 to 13.50; culmen 1.35; tarsus 2.25.

Geog. Dist.—Northern parts of northern hemisphere; in North America chiefly on the Atlantic coast; rare away from salt water; breeds in Arctic regions and in winter migrates southward, reaching the Carolinas.

County Records.—Cumberland; rare, (Brock); common in the spring of 1901, (Lord). Hancock; spring migrant, (Dorr). Kennebec; Hamlin, R. S.

Me. B. Agr. 1865, p. 172). Knox; migrant, (Rackliff). Oxford; (Maynard, L. B. C. Co. N. H. & O. Co. Me., p. 29). Sagadahoc; common in migrations, (Spinney). Washington; common, (Boardman).

General in migrations along the coast where they locally occur quite commonly at times; rare inland. They may be most ordinarily expected in October, November, April and May. In Spitsbergen great numbers are said to breed and also among the islands along the Arctic coast, making a nest of grass, moss and rushes lined with down. This is placed on the ground and four to six dirty white eggs are laid. These are said to measure 2.70 x 1.80 (Saunders). It is said that in the north their food consists of berries, grass and tender plants, but along the Maine coast they feed entirely on "eel grass," *Vallisneria spiralis*, which they tear up by the roots.

Subfamily CYGNINÆ. Swans.

Key to the species of CYGNINÆ.

- A. Lores without yellow color. Trumpeter Swan. (Hypothetical List).
- B. Lores yellow spotted or entirely yellow.
 - 1. Lores with a small yellow spot. Whistling Swan. (Hypothetical List).
 - 2. Lores entirely yellow; base of bill yellow. Whooping Swan.

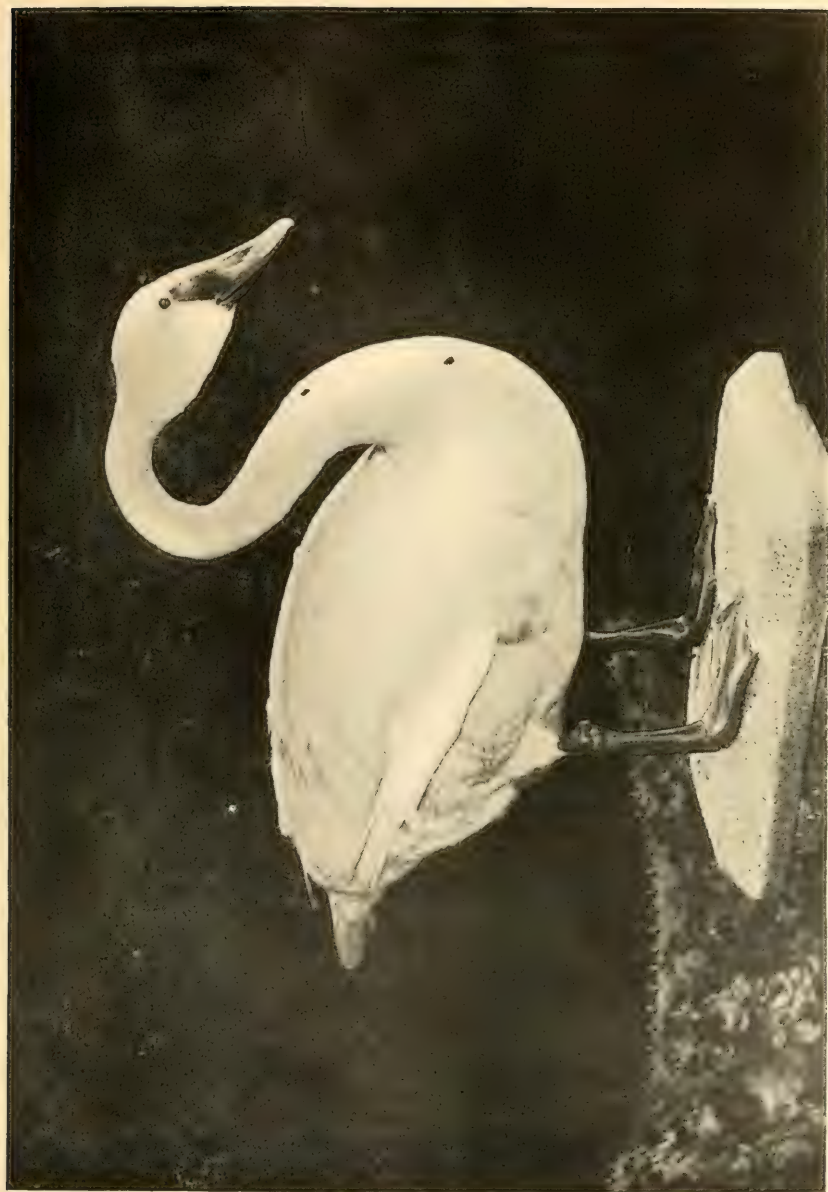
Genus OLOR Wagler.

179. *Olor cygnus* (Linn.). Whooping Swan.

Plumage of adults: whole of lores and basal portion of bill yellow; the yellow of bill surrounding the nostrils; rest of bill and feet black; plumage otherwise entirely white. Immature plumage: ashy tinged with brownish; bill and feet lighter than in adults. Wing 23.00 to 26.00; culmen 4.00 to 4.75; tarsus 4.00, (Ridgway).

Geog. Dist.—Europe and Asia; occasional in southern Greenland; accidental in Maine.

County Records.—Washington; one was shot at Poke-a-moon-shine Lake, September 10, 1905, by Chas. S. Hunnewell of Alexander, and after being mounted was sold to Clarence H. Clark of Lubec, in whose collection it now is, (Clark, J. M. O. S, 1905, p. 23).



WHOOPING_SWAN.

Mounted Specimen taken in Maine and in collection of Clarence H. Clark, Lubec. Kindness of The Journal of the Maine Ornithological Society.

Purely accidental in Maine. They breed in secluded swamps and about lakes in Lapland, Iceland and other Arctic regions of the Old World, making a bulky nest of rushes, sedges, grasses and moss which is placed on the ground. The eggs are three to seven in number, dark ivory colored and measure 4.28 x 2.88 (Davie). The food is said to consist of vegetable matter, small mollusks and water insects.

ORDER HERODIONES. Herons, Storks, Ibises, etc.

Suborder CICONIÆ. Storks, etc.

Family CICONIIDÆ. Storks and Wood Ibises.

Subfamily TANTALINÆ. Wood Ibises.

Genus TANTALUS Linnæus.

188. *Tantalus loculator* Linn. Wood Ibis.

Plumage of adults : head and neck bare, grayish dusky ; primaries, secondaries and tail glossy greenish black ; under wing coverts rose pink in breeding plumage only ; otherwise pure white. Immature plumage : the head and neck more or less covered with scattering woolly feathers of a grayish brown color ; rest of plumage more or less marked with grayish but otherwise of the general coloration of the adult. Wing 18.00 to 19.50 ; culmen 6.00 to 7.00 ; tarsus 7.00 to 8.00.

Geog. Dist. — Southern United States from the Ohio Valley, Colorado, Utah and southeastern California to the Argentine Republic ; casual north to Pennsylvania, New York and Maine.

County Records. — York ; one was shot in Berwick, July 16, 1896, by H. M. Brackett and is now in the collection of Prof. J. Y. Stanton of Lewiston, (A List of Birds of Maine, p. 38).

Only once has this species been recorded from as far north as this. They nest in colonies in the Southern States, building nests which are mere platforms of sticks on various trees in swamps. Two to four rather chalky, white eggs are laid. Four eggs taken from a nest in a cypress tree about twenty feet above the water in a swamp at Mud Lake, Orange Co., Florida, April 11, 1895, measure 2.57 x 1.88, 2.46 x 1.88, 2.55 x 1.95, 2.64 x 1.89. The birds are said to feed on fish, frogs, lizards and other reptiles of small size.

Suborder HERODII. Herons, Egrets, Bitterns, etc.

Family ARDEIDÆ, Herons, Bitterns, etc.

Key to the species of ARDEIDÆ.

- A. Wing under 6.00.
 - 1. Under parts buffy, streaked. Least Bittern.
 - 2. Under parts rufous-chestnut. Cory's Least Bittern. (Hypothetical List).
- B. Wing over 6.00.
 - 1. Wing over 13.00.
 - §. Plumage white. American Egret.
 - §§. Plumage above grayish blue. Great Blue Heron.
 - 2. Wing under 13.00.
 - §. Wing under 8.50. Green Heron.
 - §§. Wing over 8.50.
 - ?. Plumage wholly white or only slightly washed with color above.
 - a¹. Primaries always white. Snowy Heron. (Hypothetical List.).
 - a². Primaries slate color at tips. Little Blue Heron. (Immature).
 - ???. Plumage not wholly white, some parts being strongly colored or marked.
 - a¹. Crown white, usually washed with buffy. Yellow-crowned Night Heron.
 - a². Crown either darkish or streaked.
 - b¹. Crown streaked.
 - c¹. Light brown on back; outer edge of primaries reddish. Black-crowned Night Heron. (Immature).
 - c². Dark brown on back; primaries dark. Yellow-crowned Night Heron. (Immature).
 - b². Crown not streaked.
 - c¹. Crown umber or reddish brown. American Bittern.
 - c². Crown not umber, or reddish brown.
 - d¹. Crown bluish black. Black-crowned Night Heron.
 - d². Crown slaty blue. Little Blue Heron.

Subfamily BOTAURINÆ. Bitterns.

Genus BOTAURUS Hermann.

190. *Botaurus lentiginosus* (Montag.). American Bittern; Stake Driver; Indian Hen; Thunder Pump; Bog Hen; Shitepoke.

Plumage of adults: a blackish stripe each side of neck; top of head and back of neck bluish slate with buffy suffusions; back and wing coverts



NEST AND EGGS OF THE AMERICAN BITTERN.

Photograph by Ora Willis Knight.

brown, more or less bordered and mottled with buffy, reddish brown or darkish; below pale buff, the feathers streaked with buffy brown, and margined with brownish gray. Immature plumage: differs in the deeper more ochraceous color of the buffy markings. Wing 10.00 to 11.50; culmen 2.90; tarsus 3.60.

Geog. Dist. — Temperate North America, breeding usually north of the latitude of Virginia; wintering from Virginia to Guatemala, Cuba, Jamaica, and Bermuda; occasional in the British Isles.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; local summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Lee & McLain). Hancock; local summer resident, (Knight). Kennebec; (Hamlin, R. S. Me. B. Agr. 1865, p. 172). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot: a local summer resident, occurring in pairs in many suitable marshes, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common, (Spinney). Somerset; common summer resident, (Morrell). Waldo; local summer resident, (Knight). Washington; very common in summer, (Boardman). York; breeds, (Adams).

The actual number of individuals occurring in Maine is not large, and if an accurate census could be obtained it seems probable that nobody would then call the species common. It is a species of the marshes and mere, and in such localities may usually be found breeding throughout the State, generally only one pair of birds to each meadow or marsh. They arrive from the south in late April or early May and remain until late October.

The nest is composed of reeds, rushes and sedges, and is placed on the ground well concealed among the rushes and sedges in a meadow or marsh. Three to five brownish drab eggs are laid in early June, or sometimes even in late May. Four found June 6, 1893, measure 1.81 x 1.46, 1.80 x 1.45, 1.86 x 1.40, 1.85 x 1.44.

The love note of the bird sounds much as follows: —“chunk-a-bunk-chunk, chunk-a-bunk-chunk,” resembling the sound made by a person driving a stake with a mallet. The bird when about to utter this note moves its head back and forth several times with a pumping motion and finally after a few gurgles the call is uttered while this motion continues. Another cry is a hoarse croak and still another is a mere “quack.”

When approached they stiffen up and remain perfectly still, being almost exactly like one of the reeds in general appearance, and with their neck stiff and erect. They do not flush until approached very near and then with a "squawk" arise and fly off neck stretched out and feet to the rear. The incubation period as nearly as I have been able to find out is practically twenty-one days. The food consists of frogs, salamanders, small fish and water insects.

Genus ARDETTA Gray.

191. *Ardetta exilis* (Gmel.). Least Bittern.

Plumage of adult male: top of head, back, tail and blotch at each side of breast black; central wing coverts buffy with area of rufous around the buff; back of neck cinnamon rufous; under parts buff to buff whitish. Plumage of immature male: differs chiefly in that the under parts are darker colored and streaked with black. Plumage of adult female: the under parts are streaked with brownish, and the head brownish instead of black; back light umber. Plumage of immature females: differs from adult females in being rufous on the back, the feathers margined with buff. Wing 4.25 to 5.00; culmen 1.75; tarsus 1.60.

Geog. Dist.—Temperate North America from the British Provinces to the West Indies and Brazil; winters from Florida southward.

County Records.—Androscoggin; rare summer resident, (Johnson). Cumberland; found breeding at Falmouth in 1863, (Smith, F. & S. 20, p. 105); I received five taken near Portland in 1902, (Lord). Knox; rare migrant, (Rackliff). Sagadahoc; rare, two specimens, (Spinney). Washington; rare, (Boardman). York; Dr. Willis has stuffed specimens shot in Eliot, (W. L. Fernald).

This little Heron is found regularly in Maine only within the limits of the Alleghanian fauna, occasionally straggling within the Canadian limits. It is not common anywhere in the State, but occurs where found from late May until into August at least. Three to six pale bluish white eggs are laid in a nest which is a mere platform of twigs, grasses, plant stems and similar materials placed among rushes or in a small bush. Such a nest was found in a small willow tree nine inches above the water in a swamp near Omaha, Nebraska, June 27,

1897. This nest was flat and measured five and a half inches across. The five eggs measured 1.30 x 0.98, 1.31 x 0.98, 1.29 x 0.98, 1.19 x 0.93, 1.25 x 0.98.

The birds are said to nest in small, rather scattered colonies among the cat-tails, rushes and tules, and in the more southern States are said to rear two broods in a season. When on the nest the incubating bird is said to be very tame. Their love note is a oft repeated dove like coo, and when flushed they make a short "guk". They eat small fish, insects and tadpoles.

Subfamily ARDEINÆ. Herons and Egrets.

Genus ARDEA Linnæus.

Subgenus ARDEA.

✓194. *Ardea herodias* Linn. Great Blue Heron; Blue Crane; Sandhill Crane; Frog Stabber; Poke.

Plumage of adults in breeding season: feathers on back of head lengthened to form a black occipital crest; crown white in the center, surrounded by black; lores blue; neck grayish brown with a distinct line of black spots mixed with white and ochraceous marks down the middle in front; feathers of the extreme upper breast and lower neck much lengthened, narrowish, light, often streaked with dark; above slaty or bluish gray, the scapulars lighter, narrow and lengthened; rufous on bend of wing; a spot of black and white at sides of breast; breast and belly black and white, streaked, sometimes rufous tinged; feathered portion of legs rufous; legs and feet black; culmen darkish, rest of bill yellowish. Adults after breeding season lose the occipital crest but the plumage is otherwise very similar. Immature plumage: color of back more grayish brown; scapulars and feathers of upper breast and lower neck not lengthened; under parts streaked black, white, slaty and buff; crown wholly black; black at sides of breast lacking. Wing 18.00 to 20.00; culmen 4.50 to 6.00; tarsus 6.00 to 8.25.

Geog. Dist. — North America from the Arctic regions to the West Indies, northern South America, Bermudas and Galapagos; winters from the Middle States southward.

County Records. — Androscoggin; fairly common summer resident; (Johnson). Aroostook; a few colonies still breed in the county, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; five or six fair sized colonies are still found in the county, two of which are on the coast among the islands, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; five

or six small colonies still breed here, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common fall and spring, (Spinney). Somerset; common summer resident, (Morrell). Waldo; summer resident in limited numbers, (Knight). Washington; common, (Boardman). York; (Adams).

This species first appears in spring about the first of April along our southern borders on the coast, and may usually be seen near Bangor about April 10. In fall they depart in early October, a few occasionally remaining until the last of the month. Where formerly nesting colonies comprised hundreds of individuals there now remain only tens, and these too seem doomed since the Fish and Game Commissioners, (aided and abetted by the Legislature in their infinite wisdom which they so love to display), have seen fit to remove the protection of the law from these birds, because forsooth they are said to have a hankering for fish.

Just what do they usually eat? Frogs, eels, horn-pouts, pickerel occasionally, suckers, shiners, chubs, black bass, herring, water puppies, salamanders and tadpoles are the items I have discovered among their rations. They do not frequent as feeding grounds the spots where trout usually congregate, and I have very strong doubts that they eat trout, except very rarely, let alone consuming them in the vast quantities certain persons have affirmed.

One hungry mink will make more devastation among the trout in one night than five hundred Herons would think of doing in a year. It is easy to lay all the blame at the Heron's door, though if the Legislature would remove protection from the mink and put a bounty on its extermination trout matters would improve without any change in the habits of the Great Blue Heron. On aesthetic grounds alone these birds should be fully protected.

The nests are placed in trees, the inland colonies usually nesting in tall hardwood trees in a swamp near a pond or lake. Sometimes as many as ten nests are placed in a tree, this being some lofty yellow birch or other suitable tree. Along the coast among the islands they nest in evergreens, placing the nests

lower down in smaller trees, one nest to a tree. The nests are mere platforms of sticks in which from two to six unspotted greenish blue eggs are laid in early May or sometimes in late April. Three or four eggs are most often laid with us. Four from Little Spruce Island, May 16, 1896, measure 2.51×1.78 , 2.57×1.77 , 2.56×1.77 , 2.44×1.77 . The nest was on the limb of a spruce tree thirty feet from the ground, and was one of a large number on the same island.

When a colony is approached during the nesting season, the large ungainly birds may be seen perched on the trees, often flapping or holding up their wings temporarily to secure their balance. When alarmed they fly away with a short croak, returning to another perch near by or circling overhead with legs far behind and head and neck in front. They often utter a harsh "wak".

When nests contain young these latter keep up an almost continual calling for food, and if a nest with young is climbed to these are not at all bashful about presenting the intruder with a shower bath from either or both extremities. It is rather dangerous to look over the brim of a nest containing large young as they seem to think the eyes of the intruder are fair game for their sharp bills. When sufficiently grown the young stand erect in the nest, unsteadily swaying on their legs and later on scramble out on the branches.

About the inland ponds it is very interesting to watch the adults engaged in fishing. A solitary individual may be observed standing knee deep in the shallow water on the muddy bottom, seemingly asleep or lost in meditation. When an unwary tadpole or horned-pout gets sufficiently near there is a quick thrust of the bill and the prey disappears from view while meditations are resumed. The birds vary this by wading about seeking prey. Along the coast they show a decided fondness for the vicinity of fish-weirs, doubtless realizing that there is abundant opportunity for catching herring and other small fry. They feed both during the day and at night.

Genus HERODIAS Boie.

196. *Herodias egretta* (Gmel.). American Egret.

Plumage of adults in breeding season: lores orange; bill yellow, legs and feet black; otherwise pure white; forty to sixty wiry hair-like plumes grow from the interscapular region, extending straight back beyond the tail. Plumage of adults after breeding season and immature birds: long interscapular plumes wanting. Wing 15.00 to 17.00; culmen 4.00 to 5.00; tarsus 6.00.

Geog. Dist.—Temperate and tropical America, breeding north to southern Illinois and Virginia; casual north to Minnesota, Maine and Nova Scotia.

County Records.—Cumberland; one taken August 22, 1893, (Smith, F. & S. 20, p. 104); one at Scarborough in April, 1875, (Rod & Gun, 6, p. 65). Hancock; one shot at Cranberry Island, April 7, 1891, by Elwood Richardson, (E. Smith). Kennebec; one shot by Will Libby at Pleasant Pond, between Richmond and West Gardiner, August 20, 1896, this being in company with another of the same species, (Powers). Washington; a full plumaged adult, taken at Millbridge in May, 1906, was mounted by the S. L. Crosby Co. and seen by me at their establishment, it is now at Bowdoin College, (Knight).

This and other species of Herons are very prone to wander north of their usual range, either in spring, or more usually after the breeding season is over. This species is a mere straggler and does not breed with us. In the south they nest in colonies, often with other species of Herons. A nest found at Lake Arthur, Louisiana, May 4, 1896, was a mere platform of sticks and twigs, placed in a small willow tree in a big marsh. The four dull blue eggs the nest contained measure 2.22 x 1.46, 2.24 x 1.45, 2.18 x 1.45, 2.20 x 1.45. Three to five eggs are laid. The food of this species is similar to that of other Herons and like them they frequent swamps, marshes and the borders of ponds.

Genus FLORIDA Baird.

200. *Florida cærulea* (Linn.). Little Blue Heron.

Plumage of adults: lores blue; head and neck maroon, often mixed with more or less white, or white even predominating rarely; feathers of the lower neck and the interscapulars narrow, lengthened and pointed: plumage otherwise dark blue slate; feet and legs black. Immature plumage: white (sometimes slaty tinged in places); the tips of the primaries *always* bluish

slate colored; legs, feet and lores yellowish. Wing 9.00 to 10.50; culmen 2.80 to 3.40; tarsus 3.45.

Geog. Dist.—Eastern United States, breeding north to Illinois and Virginia and southward through Central America to Columbia; casual in spring and fall north to Maine.

County Records.—Cumberland; one was taken at Scarborough in September, 1881, (Brown, B. N. O. C. 7, p. 123). Knox; a fine male in the light phase was taken at Carver's pond, Vinalhaven, April 1, 1902, by H. A. Arey, (Norton, Auk 1902, p. 285). Sagadahoc; I took a female whose ovaries were much enlarged, at Popham Beach, May 19, 1901, (Spinney). Washington; one was killed about two miles from Whitneyville on the Machias River, August 16, 1906, by E. H. Smith, and is now in the collection of Manly Hardy of Brewer (record of capture from Mr. Smith and identification from Mr. Hardy).

A few individuals casually straggle into Maine, but do not breed here. In the south they nest in large colonies, often associated with other species, in swamps and marshes. Three to five dull blue eggs are laid. A nest found at Avery's Island, Louisiana, May 4, 1895, was said by the collector to be a very flat structure of sticks which was placed in a mimosa tree which was growing on floating turf in a big swamp. The five eggs from this nest measure 1.72 x 1.30, 1.71 x 1.30, 1.68 x 1.38, 1.70 x 1.29, 1.64 x 1.32.

Genus BUTORIDES Blyth.

201. *Butorides virescens* (Linn.). Green Heron; Little Green Heron; S---t-poke.

Plumage of adults: top of head dark greenish black; throat and line down front of neck to breast pale buff, mixed with dark on neck; head and neck otherwise chestnut with a cinnamon tinge; interscapulars lengthened and green; back and wing coverts green, the former often with a bluish gray wash, the latter bordered with light buff; below grayish, often buffy washed. Immature plumage: no lengthened interscapulars or bluish color on back; lower parts whitish with dark streakings. Wing 7.00 to 8.00; culmen 2.40; tarsus 1.95.

Geog. Dist.—Temperate North America, breeding north to Oregon, Ontario and Maine; winters from Florida to northern South America.

County Records.—Androscoggin; rare summer resident, (Johnson). Cumberland; uncommon summer resident near Portland, (Brown, C. B. P. p. 24);

sometimes common, (Lord); occasional in northern county, (Mead). Franklin; rare, (Richards). Kennebec; very rare, (Robbins). Knox; summer, (Rackliff). Oxford; very rare, (Nash). Penobscot; have one taken here, (Hardy). Sagadahoc; common summer resident, breeds, (Spinney). Somerset; quite common about the pond at Pittsfield where it evidently breeds, (Morrell). Washington; rare, (Boardman). York; specimens have been taken, (H. P. Libby).

A rather rare summer resident of southern and southwestern Maine, arriving from the south about May 10 and departing by September, and only a mere straggler into northern and eastern Maine. They frequent the borders of ponds and streams, nesting usually by single pair, and making a loose flat nest of sticks which is placed in low bushes or trees about the shores of ponds and streams.

Three to six pale blue eggs are laid. Five found in a flat nest of sticks well hidden in a boxelder bush (*Acer negundo*) on the banks of Geetur Creek, Bernadotte, Illinois, May 5, 1891, measure 1.45 x 1.10, 1.55 x 1.15, 1.50 x 1.14, 1.52 x 1.12, 1.52 x 1.13. The birds are inclined to siestas during the day, feeding in early morning and evening. They eat tadpoles, aquatic larvae of various species, small fish and insects. The call is a mere "squawk".

Genus NYCTICORAX Stephens.

Subgenus NYCTICORAX.

202. *Nycticorax nycticorax naevius* (Bodd.). Black-crowned Night Heron. Qua-bird; Squawk.

Plumage of adults: crown, upper back and scapulars glossy greenish black; lower back, wings, rump, tail and neck ashy gray; forehead, chin, lores, front of neck, throat, breast and belly white or pale buffy white, often tinged with decided cream yellow; three or four white occipital plumes present; legs and feet yellow. Immature plumage: white of forehead obscured; crown more or less streaked with white; above grayish brown, more or less streaked with wedge like spots of white or pale buff; scapulars dull ashy gray; outer web of primaries rufous; under parts whitish, streaked with darkish. Wing 11.50 to 13.00; culmen 2.95; tarsus 3.25.

Geog. Dist.—America, breeding from New Brunswick and Manitoba southward through South America; winters from the Gulf States southward.

County Records.—Androscoggin; not common migrant, (Johnson). Aroostook; very scattering, local, (Knight); not common at Houlton, (Batchelder, B. N. O. C. 7, 151). Cumberland; common, a good sized colony breed at Falmouth, (Lord); one specimen in twenty-five years (N. Cumb.), (Mead). Franklin; accidental, (Swain); rare, (Sweet). Hancock; at least two fair sized colonies nest on the islands along the coast, (Knight). Kennebec; (given by Hamlin, R. S. Me. B. Agr. 1865, p. 172). Knox; summer, (Rackliff). Lincoln; one in 1895, (Norton). Oxford; rare visitor, (Nash). Penobscot; not rare about the ponds at some seasons, (Knight). Piscataquis; not an uncommon visitor, (Homer). Sagadahoc; summer resident, (Spinney). Somerset; accidental, two specimens on August 9, 1896 and four, all young, August 4, 1898, (Morrell). Waldo; summer resident, breeds, (Knight). Washington; rare, (Boardman). York; breeds, (H. P. Libby).

The first individuals arrive from the south about the middle of April and the last stragglers depart in late October. They are generally distributed locally throughout the State, but seem most common along the coast where they breed on certain of the wooded islands. The eggs are three to six in number, oftenest four or five, and of a pale dull blue color. Nesting begins in early May and eggs may be found through the month.

Five eggs taken at Barred Island, Penobscot Bay, May 26, 1897, measure 2.20×1.49 , 2.20×1.52 , 2.20×1.48 , 2.14×1.45 , 2.23×1.45 . The nest was a platform of sticks, through the bottom of which the eggs could be seen from below, placed in a spruce tree on the branches about twenty-two feet up. There were several nests in the same tree, and about two hundred nests in the colony. The contents of these nests varied from single fresh eggs up to young a few days old. The parent birds were roosting about on the trees at our approach and then rose in a body, giving the appearance of a band of white from the trees rising toward the clouds. While we were on the island the birds returned to some extent, lighting on the trees or flying overhead uttering now and then a "squawk" or often a peculiar very abrupt "quak".

The species is almost entirely nocturnal in habits, though in the nesting season I have seen the birds fishing about the weirs in daytime, usually in foggy weather. As night approaches they leave their nesting or roosting places by threes, fours, and

small groups, and fly in a more or less even lined squad to their feeding grounds which are often ten miles or more away. On hearing their "squawk" floating down from above one can often discover a bunch of these birds far overhead, for they fly high up. They feed all night along the shores of the various inlets and bays at low tide, about the fish weirs and among the inland marshes and ponds, and at morning twilight the listener may hear their calls as they return to their homes.

They eat frogs, tadpoles, small fish, worms, grubs and allied forms of littoral life. The operation of feeding the young is interesting. The bird thrusts its long bill far down the throat of its offspring with seemingly sufficient violence to impale it alive, and after an intermittent pumping action, during which the young is thrown from side to side, seems to regurgitate partially digested matter into the throat of the young bird. Such partially digested fish is found in the young bird's stomach after feeding.

The nearly fledged young are fed on whole fish, remnants of which often fall under the nests and add to the characteristic odors of the heronery. The well grown young are not at all backward in giving a generous shower bath of whitewash to whomever ventures to attempt climbing to the nest, and as the intruders head appears above the lining of the nest they make simultaneous jabs with their sharp bills to the danger of one's eyesight, and often also present the intruder with their recently devoured luncheon.

Genus NYCTANASSA Stejneger.

203. *Nyctanassa violaceus* (Linn.). Yellow-crowned Night Heron.

Plumage of adults: ear coverts and crown white, the latter generally deeply tinted with buffy; several white occipital plumes present; rest of head and throat black; back, neck and under parts bluish plumbeous; scapulars and wing coverts black streaked; lores yellowish; legs and feet greenish. Immature plumage: outer web of primaries dark bluish slate; crown

black with white streaks; upper parts grayish brown streaked with wedge-like marks of buffy white or white; under parts white or whitish streaked with darker. Wing 10.50 to 12.50; culmen 3.00; tarsus 3.48.

Geog. Dist.—Temperate and tropical North America, breeding from Illinois and South Carolina south to Brazil; casual north to Colorado, Massachusetts and Maine.

County Records.—Cumberland; one taken at Back Cove, Deering, April 13, 1901, was brought me in the flesh, and was an adult female in full plumage, being now in the collection of Dr. Brock, (Lord); a female was shot at Thompson's Point, Portland, April 11, 1906, and is now in my collection, (Norton, Auk 1906, p. 457).

This species has only been twice taken in Maine, each time under circumstances which might tend to indicate that it straggled northward in company with its relatives the Black-crowned Night Herons. Its nesting habits are not different from those of the Black-crowned species, but it has a greater tendency to breed in smaller colonies or by solitary pair. Four or five pale blue eggs are laid which cannot be distinguished with certainty from those of its near relative.

Five eggs from Lake St. John, Louisiana, May 27, 1896, were placed in a nest of sticks and twigs which was flat and frail and was placed in a low willow tree in a marsh. These eggs measure 1.95 x 1.48, 1.98 x 1.48, 2.05 x 1.50, 2.05 x 1.52, 2.05 x 1.51. A quite large colony was nesting there.

Order PALUDICOLÆ. Cranes, Rails, etc.

Suborder RALLI. Rails, Gallinules, Coots, etc.

Family RALLIDÆ. Rails, Gallinules and Coots.

Key to the species of RALLIDÆ.

A. Wing under 3.50.

1. Back brownish black, the feathers margined with buffy and barred with white. Yellow Rail.
2. Back brownish black with small rounded spots of white. Black Rail. (Hypothetical List).

B. Wing over 3.50.

1. Toes with lobe like flaps. American Coot.
2. Toes not having lobe like flaps.

§. Bill under 1.75.

? Wing over 6.25.

a¹. General cast of plumage bluish, feet yellow. Purple Gallinule.

a². General cast of plumage slaty, feet greenish. Florida Gallinule.

?? Wing under 6.25.

a¹. Wing over 5.00. Corn Crane.

a². Wing under 5.00.

b¹. Bill over 1.00. Virginia Rail.

b². Bill under 1.00. Sora Rail.

§§. Bill over 1.75.

a¹. Upper parts of a general brownish color, *distinctly* striped with brownish black; cheek below eye cinnamon rufous. King Rail.

a². Upper parts of a general grayish color with indistinct stripes of black or no stripes; cheek below eye gray. Clapper Rail.

Subfamily RALLINÆ. Rails.

Genus RALLUS Linnæus.

208. *Rallus elegans* Aud. King Rail; Royal Rail; Marsh Hen.

Plumage: above olive brown, distinctly striped with brownish black; feathers of the scapulars margined with olive gray; wing coverts rufous; cheek below eye cinnamon rufous; throat whitish; belly and flanks fuscous, rather widely barred with white; wing coverts, neck and breast rufous. Wing 6.00 to 7.00; culmen 2.30; tarsus 2.25.

Geog. Dist.—Eastern North America, breeding north to Connecticut, Illinois and Kansas; casually straying to Ontario, Massachusetts and Maine; winters from Virginia southward.

County Records.—Cumberland; taken at Scarborough, (Brown, B. N. O. C. 7, p. 60); one shot at Falmouth, September 19, 1895, by Walter Rich, (Brock, Auk 13, p. 60); one taken at Dyke Marsh, near Portland, December 17, 1898, (Brock, Auk. 13, p. 79); two in fall of 1900 near Portland, (Lord); to which Mr. Brown writes can probably be added the specimens recorded by him as Clapper Rails, (Cf. Brown B. N. O. C. 4, p. 108 and C. B. P., p. 30, also withdrawal of same in Auk, 1907, p. 95 so that the whole fabric is now merely a guess).

This species occasionally straggles north to Cumberland County where all our specimens seem to have been taken in the marshes near Portland. It is primarily a species of the

fresh water marshes, during the breeding season at least, but seems to have been taken on salt marshes here. The cry is quoted by Chapman as "bup-bup-bup-bup-bup" uttered with increasing rapidity. The birds skulk through the marsh grass and do not take flight until forced to do so by danger.

The nest is usually placed on the ground in a tussock of sedges or grass in a fresh water marsh, and is composed of sedges and grasses. Six to fourteen eggs are laid and these are buffy white, quite heavily spotted with reddish brown and lilac. Eleven which were taken in Palo Alto County, Iowa, June 14, 1891, measure 1.59 x 1.17, 1.58 x 1.18, 1.54 x 1.16, 1.52 x 1.16, 1.55 x 1.17, 1.52 x 1.15, 1.55 x 1.15, 1.55 x 1.16, 1.50 x 1.15, 1.58 x 1.16, 1.55 x 1.16. The species is not known to nest in Maine. The young are said to be covered with a glossy black down.

211. *Rallus crepitans* Gmel. Clapper Rail.

Plumage: above pale greenish olive, the feathers being widely margined with grayish so as to give a grayish cast to the upper parts which are often very indistinctly striped with darker; cheek below eye gray; throat white; neck and breast cream buff with an ashy tinge on chest; flanks and belly grayish brown, broadly barred with white. Wing 5.50 to 6.20; culmen 2.35; tarsus 2.06.

Geog. Dist.—Salt marshes of the Atlantic coast of the United States, breeding from southern Connecticut southward; resident from Virginia southward; casual north to Maine.

County Records.—Androscoggin; one taken at Sabattus Pond in 1874 by C. F. Nason, (Smith, F. & S. 20, p. 124). Cumberland; no record now Brown's being open to doubt and withdrawn by him (Brown, Auk. 1907, p. 95). Sagadahoc; a female was killed at Popham Beach, October 12, 1900, and about two weeks later I shot another but could not find it, (Spinney). York; (Brown, B. N. O. C. 4, p. 108).

The species is primarily a bird of the salt marshes, skulking through the grass and sedges, and can be driven to take wing only in great extremity.

They usually nest in rather scattered colonies on the salt marshes south of our limits, making a nest of grass and reeds which is on the ground and well concealed in the grass or

sedges. Nine eggs were taken on Cobb's Island, Virginia, June 16, 1888, from a nest which was well hidden in a clump of beach grass. The eggs are pale buffy white in color, rather sparingly spotted with larger spots of reddish brown and lilac than are eggs of the King Rail from which they are readily distinguished. The eggs in question measure 1.69 x 1.16, 1.70 x 1.15, 1.70 x 1.15, 1.67 x 1.13, 1.69 x 1.15, 1.65 x 1.15, 1.67 x 1.14, 1.71 x 1.15, 1.63 x 1.13. As many as fifteen eggs are sometimes laid. The young are covered with glossy black down. The birds feed on small snails, soft mollusks, various kinds of worms, insects and similar marsh forms of life.

✓ 212. *Rallus virginianus* Linn. Virginia Rail.

Plumage: above appearing olive brownish, broadly striped with blackish, the feathers bordered with pale grayish; wing coverts rufous; throat, cheeks and lores whitish; under parts cinnamon; flanks dusky with white bars. Wing 4.00 to 4.30; culmen 1.55; tarsus 1.90.

Geog. Dist.—North America, breeding from Illinois, Pennsylvania and New York north to Labrador; winters from New York south to Guatemala and Cuba.

County Records.—Androscoggin; rare summer resident, (Johnson). Cumberland; rare summer resident, (Mead); common near Portland, (Lord). Franklin; rare summer resident, (Swain). Kennebec; W. R. Gifford has a specimen shot at Waterville, (Morrell). Knox; rare migrant, (Rackliff). Oxford; found young in down at Fryeburg in August, 1883, (Mead). Penobscot; rare summer resident, (Knight). Sagadahoc; common in fall, (Spinney). Somerset; found a nest with five newly hatched young and two eggs (sterile) at Hartland, August 5, 1896, (Knight). Washington; common, (Boardman).

The first arrivals from the south appear in late April, and the last lingerers are gone before the last of October. They nest in fresh marshes as a general thing, placing the nest in a tuft of sedges, rushes or similar vegetation not far from the water. Six to twelve eggs are laid, and they are pale buffy white, spotted with reddish brown and lilac. Seven eggs taken on Rattlesnake Island, Niagara River, June 16, 1894, measure 1.38 x 0.95, 1.36 x 0.94, 1.30 x 0.95, 1.30 x 0.95, 1.35 x 0.95, 1.29 x 0.95, 1.35 x 0.91. The nest was built of coarse swamp

grass lined with fine grass and was placed in a tussock and well concealed.

The cry of the birds sounds much like "cutty-cutty-cutty", though when with the young the note of the parent sounds like "ki-ki-ki". In localities where they are likely to occur they should be carefully looked for sneaking through the grass. The downy young are glossy black. The birds feed on worms, lepidopterous larvæ, snails, beetles and other marsh insects. The flight of all the Rails is low, hesitating and difficult.

Genus PORZANA Vieillot.

Subgenus PORZANA.

214. *Porzana carolina* (Linn.). Sora; Carolina Rail.

Plumage of adults: front of head, chin, line down middle of neck and stripe in middle of head black; rest of head, throat and breast plumbeous; upper parts otherwise olive brown with black centers to many feathers and white streaks on the scapulars and back in places; wing brownish with white on outer edge of first primary; flanks barred with darkish and white; belly white. Immature plumage: brownish on the front of the head; chin and throat whitish; lores brownish; breast cinnamon washed; darker above. Wing 4.10 to 4.50; culmen 0.82; tarsus 1.29.

Geog. Dist.—Temperate North America, breeding from New York, Illinois and California northward; winters from the Carolinas to South America.

County Records.—Androscoggin; rare summer resident, (Johnson). Aroostook; seen at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 151). Cumberland; common, (Brock). Knox; migrant, (Rackliff). Oxford; not common summer resident at Norway, (Verrill, P. E. I. 3, pp. 136 et seq.). Penobscot; summer resident of very local occurrence, eggs were found near Bangor in 1898, (Knight). Sagadahoc; quite common in fall, (Spinney). Somerset; common summer resident, (Morrell). Waldo; summer resident, seemingly rare, (Knight). Washington; abundant, (Boardman). York; has been taken in the county, (H. P. Libby).

Locally this species occurs throughout the State from late April until well along in October. Its breeding places are chiefly about the inland marshes, bogs and ponds, and in such places it is never found in very great numbers with us. Along the coast in the more extensive marshes it is locally common during migration.

The nest is placed among the sedges in floating bogs or in the tussocks of sedges and grass along the edge of meadows, being generally roofed over or arched. Five to fifteen eggs are laid, and these are ochraceous buff of a darker color than eggs of the Virginia Rail, and spotted with reddish brown. The spots are heavier and more numerous about the larger end. Five eggs from near Palmyra, July 22, 1894, measure 1.26 x 0.90, 1.25 x 0.90, 1.30 x 0.89, 1.25 x 0.90, 1.24 x 0.86. The nest was composed entirely of dried meadow grass and was woven in saucer form and placed in a large tussock of grass.

When disturbed the birds skulk about through the sedges and bogs uttering a peculiar "kuk-kuk-kuk" varied by a peculiar whistling sound not unlike the note of the Red-winged Blackbird. Their food does not differ materially from that of the Virginia Rail, consisting of a great variety of worms and marsh inhabiting insects.

Subgenus COTURNICOPS Bonaparte.

215. *Porzana noveboracensis* (Gmel.). Yellow Rail; Yellow Crake.

Plumage: feathers of the upper parts striped with black, bordered with ochraceous and narrowly barred with white; head, neck and breast ochraceous; secondaries, under wing coverts and axillars white; middle of belly white; flanks and lower belly dark, barred with white. Wing 3.00 to 3.40; culmen 0.55; tarsus 0.91.

Geog. Dist.—Eastern North America, breeding from Washington County, Maine, and northern Illinois northward; less commonly found but still occurring west to Nevada and California; casual in Cuba and the Bermudas; in winter ranging southward, the exact or even approximate winter distribution being clouded in obscurity.

County Records.—Cumberland; quite common, (Brock). Knox; very rare migrant, (Rackliff). Washington; found breeding, (Boardman).

The exact habits of this most secretive and retiring little bird are rather unknown because of its very faculty for evading observation. It seems probable that it occurs in migration



NEST AND EGGS OF THE YELLOW RAIL.

From *The Warbler*, by the kindness of Hon. John Lewis Childs.

during April and May and again in October and November along the coast.

Mr. Boardman found it nesting in Washington County, the nest being placed on the ground in marshes in similar situations to that of the Sora. The eggs are buffy brown, marked with reddish brown, the markings being chiefly at the larger end. Five to ten are laid and the average measurement is said to be 1.08×0.82 . Nuttall compares the notes to the croaking of a tree frog much like " 'krek, 'krek, 'krek, 'krek, 'krek, 'kuk, 'k'kh".

Genus CREX Bechstein.

217. *Crex crex* (Linn.). Corn Crake; Land Rail; Corn Creak.

Plumage of adults: above light brown with black stripes; wings rusty brown, the greater coverts with a few whitish marks; crown, a stripe each side of head, fore neck and upper breast brown; rest of head ashy gray; throat and belly white; sides and under tail coverts barred brown and white. Immature plumage: no gray on head, otherwise very similar. Wing about 5.80; culmen 0.85; tarsus 1.60.

Geog. Dist.—Europe and northern Asia, casual in Greenland, Bermuda and eastern North America, casual in Maine.

County Records.—Cumberland; one taken at Dyke Marsh, Falmouth, October 4, 1889, by John Whitney and now in Dr. Brock's collection, (Brock, Auk. 13, p. 173).

The name of this species comes from the creaking cry it utters. In Europe it frequents meadows, marshes and grain fields near rivers. Five to eight eggs are laid of a light reddish buff color spotted with reddish brown, the spots most numerous about the larger end. Such eggs as I have seen were very characteristic. Seven from St. Florence, West Lenby, G. B., May 19, 1895, measure 1.44×1.05 , 1.45×1.05 , 1.48×1.01 , 1.38×1.02 , 1.44×1.05 , 1.55×1.02 , 1.45×1.00 . The nest was composed of dry grass and was on the ground among the growing grass. The habits are reported as very similar to our American species of small Rails.

Subfamily GALLINULINÆ. Gallinules.

Genus IONORNIS Reichenbach.

218. *Ionornis martinica* (Linn.). Purple Gallinule.

Plumage of adults: a bare bluish shield or plate on front of crown; head, neck and lower parts rich bluish purple, darker on belly; back glossy olive green; wings light blue with a greenish tinge; bill red with yellow tip; legs yellow; under tail coverts white. Immature plumage: bill dull yellow and frontal bare spot smaller; mottled with white below, washed with brownish above. Downy young: said to be uniform black with numerous hair like feathers of white on the head; base of bill yellowish and end black. Wing 7.00 to 8.00; culmen including to rear of frontal shield 1.95; tarsus 2.35.

Geog. Dist.—South Atlantic and Gulf States, breeding north to South Carolina and Illinois; winters from Florida to Brazil; casual as a straggler to Maine, New York and Wisconsin.

County Records.—Androscoggin; one taken at South Lewiston by John Turner, April 11, 1897, (C. D. Farrar). Hancock; one taken at Winter Harbor, Mt. Desert, November 7, 1899, (Swain, J. M. O. S. 1900, p. 34). Knox; (Rackliff). Lincoln; one taken at Boothbay, (Purdie B. N. O. C. 5, 173). Washington; accidental, (Boardman).

Occasionally stray individuals of this southern species straggle into Maine for some unknown reason. Ten eggs from Avery's Island, Louisiana, May 6, 1895, measure 1.63 x 1.16, 1.52 x 1.16, 1.50 x 1.14, 1.47 x 1.13, 1.55 x 1.15, 1.55 x 1.11, 1.51 x 1.14, 1.58 x 1.13, 1.54 x 1.15, 1.56 x 1.15. The nest was a platform of rushes woven in the shape of a shallow basket, suspended and woven into rushes growing around an "alligator hole" in a marsh. The eggs are muddy white, sparsely spotted chiefly about the larger end with smallish dots of brown and umber.

Both species of Gallinules are good swimmers and also adepts at walking or skulking over and through the rushes and reeds. Their habits are rail-like in many ways and their flight is similar to that of the Rails, being low, quavering and hesitating. Their cry is a peculiar "cluk". During the breeding season they are very vociferous and the marsh or bog-hole which is their home resounds with their clucks and calls.

Genus GALLINULA Brisson.

219. *Gallinula galeata* (Licht.). Florida Gallinule; Common Gallinule; Red-billed Mud-hen.

Plumage of adults: bill and bare shield at front of crown vermillion, the bill tipped with greenish yellow; above dark blue except for brownish washing on back and scapulars; below dark blue with a few white markings on the flanks and white on belly and under tail coverts; legs greenish, slightly red at tibiae. Immature plumage: much grayish white color below; bill brownish; crown plate smaller; tibiae not reddish. Downy young: glossy black with a sooty tinge along middle of lower parts; skin at base of bill red; top of head bald; many silvery white hairs on throat and cheeks. Wing 6.90 to 7.40; culmen 1.80 to end of shield; tarsus 2.18.

Geog. Dist.—Temperate and tropical North America, wintering from the Gulf States southward to Brazil and Chili; breeding locally as far north as Minnesota and (according to Chapman) southern Maine.

County Records.—Androscoggin; rare migrant, (Johnson). Cumberland; two immature males were taken at Falmouth, one Sept. 20, 1894, being in the collection of W. H. Rich, and the other Sept. 30, 1894, being in collection of Dr. Brock, (Brock, Auk 13, p. 255); one at Falmouth in the spring of 1903, (Lord). Hancock; one taken at East Sullivan, May 5, 1883, by M. Uran, (Everett Smith). Penobscot; have occasionally known of specimens being brought into the taxidermist shops, (Knight). Washington; several, (Boardman).

Outside of the reference in Chapman's Birds of Eastern North America I have been unable to find any report of this species breeding in Maine. They seem to straggle along in spring and fall. The species nests in fresh water swamps. The nests are usually composed of dead rushes, cat-tails, sedges, etc., and are placed in tussocks and clumps of cat-tails, rushes and on crushed down masses of these plants in situations usually so that the birds can have quick access from the nest to the water. The nest is usually a few inches above the water level, but occasionally, perhaps owing to a rise in the water, floating nests are found.

Six to fourteen ochraceous buff colored eggs, which are spotted with rufous brown and umber most frequently near the larger end, are usually laid. These eggs are darker colored than eggs of the Purple Gallinule, and the spots are larger and bolder. Nine eggs from a floating nest of rushes and reeds which was

anchored to the rushes in a reedy lake were taken at Havana, Illinois, June 28, 1891. These eggs measure 1.72 x 1.20, 1.65 x 1.20, 1.72 x 1.14, 1.66 x 1.23, 1.80 x 1.24, 1.68 x 1.15, 1.65 x 1.12, 1.74 x 1.23, 1.75 x 1.20.

The food of the birds consists of small worms, tadpoles, slugs, snails, some water plants such as duckweed, and similar stuff. They are good swimmers, and their progress through the water is timed by a peculiar bobbing motion of their heads. The alarm note is a peculiar "keck". They also utter various "clucks" and carry on quite animated conversations. When alarmed while out in the open water they quickly rise and fly into the shelter of the weeds, their feet hanging down and often kicking as if to aid their progress.

Subfamily FULICINÆ. Coots.

Genus FULICA Linnæus.

✓ 221. *Fulica americana* Gmel. American Coot; Mud-hen.

Plumage of adults: bill whitish save for two brownish spots near its tip; frontal plate brownish and bare of feathers; head and neck nearly black; edge of wing, tips of secondaries, and under tail coverts white; otherwise bluish slate color and slightly paler below; legs and feet greenish; toes lobed. Immature plumage: crown plate smaller; plumage below much suffused with whitish; bill more olive greenish; slight brownish wash to back feathers. Downy young: white below and darkish above; throat and head with numerous orange hair-like feathers; lores and bill red, the latter black tipped. Wing 7.10 to 7.50; culmen 1.40; tarsus 2.15.

Geog. Dist.—North America from Greenland and Alaska south to the West Indies and Veragua; breeds locally throughout its range but is not known to breed in Maine.

County Records.—Androscoggin; migrant, (Johnson). Cumberland; frequent spring and fall, (Lord); rare in northern county, (Mead). Hancock; migrant, (Murch). Kennebec; (Dill). Knox; rare migrant, (Rackliff). Oxford; visitant, (Nash). Penobscot; not frequent in fall, (Knight). Sagadahoc; common in fall, (Spinney). Somerset; rare migrant, (Morrell). Washington; not uncommon, (Boardman).

This species occurs chiefly in October and November, and very seldom indeed in April and May. It is most generally reported along the coast, but probably also occurs locally

throughout the State during migration. It is indeed peculiar that it does not seem to breed in this State. During the breeding season they frequent fresh water ponds, pug-holes, marshes and swamps, preferring an aquatic life.

In California I have observed the Mud-hens swimming in small groups over the rush bordered ponds and talking to one another in low creaking gabbles and squaks. When alarmed they rise and skim frantically along the surface of the water, using both feet and wings in their frantic efforts to reach the shelter of the rushes, here unseen they gabble with one another concerning the cause of the alarm.

The nest is composed of tules, reeds and sedges and is usually floating on the water among the rushes and tules to which it is anchored, or some times placed on top of broken down masses of vegetation. A nest containing eight eggs which was found July 8, 1897, was of the floating kind, being slightly cupped and barely large enough to hold the eggs. This nest measured fifteen inches across on the outside and eight inches across the inside. Its external depth was eight inches and its internal depth two inches. The eggs are clay white, peppered over the entire surface with black. These in question measure 1.85 x 1.26, 1.88 x 1.30, 1.88 x 1.29, 1.83 x 1.25, 1.85 x 1.32, 1.81 x 1.30, 1.85 x 1.30, 1.86 x 1.27.

The food of these birds is largely of animal nature consisting of almost any pond inhabiting insects, snails, slugs, leeches, and also tender vegetable shoots, duck weed, (*Lemna* and *Spirodela*), *Azolla*, etc.

Order LIMICOLÆ. Shore Birds.

Family PHALAROPODIDÆ. Phalaropes.

Key to the species of PHALAROPODIDÆ.

A. Wing under 4.80. Northern Phalarope.

B. Wing over 4.80.

1. Bill over 1.10. Wilson's Phalarope.

2. Bill under 1.10. Red Phalarope.

Genus CRYMOPHILUS Vieillot.

222. *Crymophilus fulicarius* (Linn.). Red Phalarope; Coot-footed Tringa; Gray Phalarope; Sea Goose.

Plumage of adult female in summer: fore part of head blackish; hind head and chin fuscous; sides of head white; back and scapulars blackish with buff borders to feathers; wings gray with white tips to the greater coverts and part of the secondaries; upper tail coverts rufous; below reddish brown. Plumage of adult male in summer: colors not as bright as in the female; top of head and back of neck streaked with ochraceous and dark; white on sides of head less prominent; size smaller. Plumage of adults in winter: back of neck and region about eye fuscous; wings grayish fuscous with white tips to the secondaries and coverts; back and scapulars pearl gray; rump and tail fuscous. Immature plumage: crown, hind neck, back and scapulars black, edged with ochraceous; wing coverts plumbeous, the middle coverts bordered with buff; rump and upper tail coverts plumbeous; tail coverts with ochraceous border; throat and chest brownish buff tinged; remainder of head, neck and lower parts white. Feet with scalloped lateral membranes (lobed). Wing 5.20 to 5.50; culmen 0.90; tarsus 0.84.

Geog. Dist.—Northern parts of northern hemisphere, breeding chiefly in Arctic regions and migrating south in winter; in the United States found in winter south to the Middle States, Ohio Valley and Cape St. Lucas.

County Records.—Cumberland; rare in migration, (Brock); one fall of 1899, (Lord); Sept. 26, 1904, one secured at Westbrook, and Oct. 7, 1905, another at Old Orchard, (Norton, J. M. O. S. 1905, p. 47). Penobscot; I know of a pair being taken at Hermon Pond, (Hardy). Somerset; accidental, one shot October 17, 1893, (Morrell). Washington; not uncommon, a few are summer resident, (Boardman). York; Miss Dane has one mounted which was taken near Kittery, (W. L. Fernald).

This species is primarily a bird of the open ocean except during the breeding season, and is mainly found far out from our coast. It is occasionally taken along our shores in fall and more rarely in spring. Mr. Boardman twice found the species breeding in Maine.

The eggs are pale olive gray, spotted and blotched with brown and chocolate. Four is almost invariably the number laid in a slight nest of dry grass in a hollow in the earth. Four eggs now before me were taken at Skutustachi, North Iceland, June 17, 1895, from a nest on the ground. These eggs measure 1.19 x 0.83, 1.18 x 0.78, 1.18 x 0.82, 1.20 x 0.80. During the

breeding season many nest about the inland waters of the north as well as in salt water localities.

The female bird is master of ceremonies in this tribe, doing the courting and obliging her mate to incubate while she is enjoying life. They are excellent swimmers, feeding on surface forms of marine life such as crustacea and the myriad other insignificant forms of marine life.

Genus PHALAROPUS Brisson.

Subgenus PHALAROPUS.

223. *Phalaropus lobatus* (Linn.). Northern Phalarope.

Plumage of adult female in summer: above a general slaty gray with buffish edgings to feathers of back and scapulars; front and sides of neck mixed rufous and slaty gray; under parts white. Plumage of adult male in summer: colors duller than those of the female; upper parts blackish with more ochraceous edgings; chest mixed white and grayish; rufous confined to sides of neck. Plumage of adults in winter: forehead, line over eye, sides of head and neck, tips of greater wing coverts and under parts white; top of head and part of chest grayish. Immature plumage: forehead, stripe in ear region, lores and below white; blackish above with buffish edgings to feathers. Wing 4.10 to 4.50; culmen 0.88; tarsus 0.78. Feet with lobe like membranes.

Geog. Dist.—Northern portions of northern hemisphere, breeding in the far north and migrating south in winter to the tropics.

County Records.—Cumberland; rare, (Brock); one in fall of 1901, (Lord). Franklin; accidental, (Richards). Hancock; spring and fall migrant, (Knight). Knox; migrant, (Norton). Penobscot; one taken by Mr. Fuller of Newport, (Hardy). Piscataquis; one shot on Sebec River near Milo, May 3, 1897, and sent to me in the flesh by William Cooper, (Knight). Sagadahoc; common, (Spinney). Somerset; one secured near Pittsfield, September 1, 1898, (Morrell, Me. Sp. Nov. 1898, p. 20). Waldo; I saw dozens in the water between Castine and Belfast in late winter, February, 1900, (Knight). Washington; plenty spring and fall, (Boardman).

Not rare along the coast from September to November and in April and May, occasionally also in late winter, while inland a few stragglers occur in fall and spring. They nest quite generally along the coast of South Greenland (Hagerup). The nest is a mere hollow in the ground lined with a little grass.

The eggs are usually four, sometimes only three in number and about the same color and range of size as in the preceding species. Large flocks occur at sea in fall and spring, and they feed on surface forms of life. The female of this species also takes the lead in family affairs.

Genus STEGANOPUS Vieillot.

224. *Steganopus tricolor* Vieill. Wilson's Phalarope.

Plumage of adult female in summer: blackish line each side of crown; crown, forehead and middle of back bluish gray; rufous line down sides of back and scapulars; nape white; upper breast rufous tinged; upper tail coverts and under parts white. Plumage of adult male in summer: above fuscous brown with paler borderings; sides of neck and breast rufous tinged; line over eye, nape, upper tail coverts and lower parts white. Plumage of winter adults: above gray with white margins to feathers; stripe over eye, upper tail coverts and lower parts white except for a grayish suffusion on chest. Immature plumage: above darkish or blackish with buff borders to feathers; neck buff tinged; line over eyes, upper tail coverts and lower parts white. Wing of female about 5.20, wing of male about 4.85; culmen of female 1.34, culmen of male 1.22; tarsus of female 1.36, tarsus of male 1.22. Feet with lobe-like membranes.

Geog. Dist.—The interior of temperate North America, breeding from Illinois and Utah northward to the Saskatchewan; in winter south to Patagonia and Brazil.

County Records.—Androscoggin; a bird of the year shot at Sabattus Pond, September or October, 1906, (C. D. Farrar). Cumberland; three taken near Scarborough, June 9, 1881, (Smith, F. & S. 20, p. 124).

We have only these recorded instances of the species being found in Maine, it being a very exceptional straggler. On the western prairies they nest in grassy meadows and marshes bordering streams or small ponds. The male bird scratches a slight hollow which is unlined or sparsely lined with grass, in which the female lays three or four eggs and leaves the rest of the task to the male. The eggs are cream buff or buffy white, heavily blotched with chocolate (Nelson) and measure about 1.28 x 0.94. The food consists of small insects, worms and other similar material.

Family RECURVIROSTRIDÆ. Avocets and Stilts.

Key to the species of RECURVIROSTRIDÆ.

- A. Bill strongly turned upward; hind toe present. American Avocet.
 B. Bill straight or nearly so; hind toe absent. Black-necked Stilt.

Genus RECURVIROSTRA Linnæus.

✓ 225. *Recurvirostra americana* Gmel. American Avocet.

Plumage of adults in summer: head, neck and chest cinnamon rufous; scapulars and primaries black; ends of greater coverts, the middle coverts and portion of secondaries, the back, tail and belly white. Plumage of adults in winter: differs chiefly in that the head, neck and chest are white; a bluish gray wash on top of head and neck. Immature plumage: differs in the feathers of the back and scapulars being lightly mottled with buffy; hind neck washed with rufous. Wing 8.40 to 9.00; culmen 3.50; tarsus 3.76. Bill strongly turned upward; hind toe present.

Geog. Dist.—Temperate North America, chiefly in the interior, breeding from Illinois and Texas northward to the Saskatchewan; wintering from the Gulf coast south to Guatemala and the West Indies.

County Records.—Cumberland; one killed on Cape Elizabeth, November 5, 1878, (Brown, B. N. O. C. 4, p. 108).

There is only the one record of the species straggling to Maine. It is common as a breeding bird on the plains of Montana, Wyoming, Colorado, Dakota and Utah. A nest taken at Loveland, Colorado, June 29, 1888, was composed of decayed weeds and tules lined with fine grasses and was placed on the ground in a swamp. The four eggs are of a buffy clay color handsomely spotted with chocolate and black. They measure 1.91 x 1.35, 1.95 x 1.30, 2.00 x 1.36, 2.00 x 1.39.

The birds are said to nest in colonies, assembling in some marsh or grassy swamp where the local conditions are right. In most cases no nest is made, the eggs being laid in a mere depression or on such vegetable matter as may cover the ground. In feeding the birds wade along in the water, dropping their bill beneath the surface until it touches the bottom and moving it from side to side as they wade along, picking up small mollusks, worms, insects and similar forms of life.

Genus HIMANTOPUS Brisson.

226. *Himantopus mexicanus* (Mull.). Black-necked Stilt.

Plumage of adult male: forehead, spot above and spot below eyes, cheeks, entire lower parts, rump and upper tail coverts white; tail grayish; back, scapulars, wings and rest of head and neck glossy black; legs and feet red. Plumage of adult female: back and scapulars brownish slate, otherwise much as in male. Immature plumage: feathers of back, scapulars and tertials bordered with light buff and the head and neck mottled with white. Wing 8.40 to 8.90; culmen 2.30; tarsus 4.10.

Geog. Dist.—Temperate North America from the interior to the Pacific, southward to Florida, the West Indies, Brazil and Peru; breeding locally in the Mississippi Valley, Minnesota, California, etc.; straggler to Maine.

County Records.—Knox; a specimen taken at Rockland early in May, 1889, was sent to Chas. K. Reed, (O. & O. 14, p. 78).

We have only this one record for Maine, the specimen so frequently and erroneously cited as from Maine being taken by Mr. Boardman in *New Brunswick*. Four eggs seem to be the number most frequently laid, though three are sometimes the complement. The nest is a mere depression in the ground, lined with a little grass, and is situated on the margin of a lake or pond or near some other inland body of water. The birds nest in colonies.

Four eggs taken in Orange County, California, June 11, 1893, are olive colored, spotted thickly with brownish black. These eggs measure 1.89 x 1.18, 1.72 x 1.14, 1.79 x 1.20, 1.84 x 1.23. The Stilts are waders like the Avocet, being fond of feeding in shallow pools. Their food is of similar nature to that of the Avocets.

Family SCOLOPACIDÆ. Snipes, Sandpipers, etc.

Key to the species of SCOLOPACIDÆ.

- A. Toes three. Sanderling.
- B. Toes four.
 - 1. Wing 7.50 or over.
 - §. Bill curved downward.
 - ? Bill under 3.00. Eskimo Curlew.
 - ?? Bill over 3.00.

- a¹. Bill under 4.25. Hudsonian Curlew.
- a². Bill over 4.25. Long-billed Curlew.
- §§. Bill not curved downward.
- ? Bill over 2.75.
 - a¹. Axillars black, not barred; bill under 3.47; wing usually under 8.50. Hudsonian Godwit.
 - a². Axillars either barred with black or rufous colored not barred; bill over 3.47; wing usually over 8.50. Marbled Godwit.
- ?? Bill under 2.75.
 - a¹. Axillars black, not barred. Willet.
 - a². Axillars barred with black. Greater Yellow-legs.
- 2. Wing under 7.50.
- §. Bill 2.00 or more.
 - ? Axillars not barred. American Woodcock.
 - ?? Axillars barred with black.
 - a¹. Bill both widened and pitted at tip.
 - b¹. Length under 11.00; under parts barred with rufous; size averaging smaller. Dowitcher.
 - b². Length over 11.00; under parts more uniform rufous; size averaging larger. Long-billed Dowitcher. (Hypothetical List.)
 - a². Bill not widened or pitted at tip. Wilson's Snipe.
- §§. Bill under 2.00.
- ? Wing over 5.75.
 - a¹. Tail with cross bars.
 - b¹. Outer primary not barred. Yellow-legs.
(The Ruff might key in about here, see description.)
 - b². Outer primary barred with black. Bartramian Sandpiper.
 - a². Tail without cross bars.
 - b¹. Middle upper tail coverts with cross bars or streaks; tarsus under 1.50. Knot.
 - b². Middle upper tail coverts not barred; tarsus over 1.50. Ruff.
- ?? Wing under 5.75.
 - a¹. Tail with cross bars.
 - b¹. Wing under 4.75. Spotted Sandpiper.
 - b². Wing over 4.75.
 - c¹. Bill under 1.00; under parts tinged with buffy. Buff-breasted Sandpiper.
 - c². Bill over 1.00; under parts white, breast streaked with blackish. Solitary Sandpiper.
 - a². Tail without cross bars.
 - b¹. Bill over 1.05.

- c¹. Tarsus over 1.50. Stilt Sandpiper.
- c². Tarsus under 1.50.
 - d¹. Middle upper tail coverts with cross bars or streaks. Curlew Sandpiper.
 - d². Middle upper tail coverts without cross bars or streaks.
 - e¹. Middle upper tail coverts grayish; bill slightly curved downward. Red-backed Sandpiper.
 - e². Middle upper tail coverts black or fuscous; bill not curved.
 - f¹. Feathers of upper parts margined with gray. Purple Sandpiper.
 - f². Feathers of upper parts margined with rufous. Pectoral Sandpiper.
- b². Bill under 1.05.
 - c¹. Wing under 4.00.
 - d¹. Toes not webbed. Least Sandpiper.
 - d². Toes webbed at base.
 - e¹. Bill under 0.85. Semipalmated Sandpiper.
 - e². Bill over 0.85. Western Sandpiper. (Hypothetical List).
 - c². Wing over 4.00.
 - d¹. Inner web of primaries speckled. Buff-breasted Sandpiper.
 - d². Inner web of primaries not speckled.
 - e¹. Middle upper tail coverts white; breast white marked with black. White-rumped Sandpiper.
 - e². Middle upper tail coverts not white; breast buffy marked with black.
 - f¹. Middle upper tail coverts black; rufous margined. Pectoral Sandpiper.
 - f². Middle upper tail coverts fuscous, buffy margined. Baird's Sandpiper.

Genus PHILOHELA Gray.

228. *Philohela minor* (Gmel.). American Woodcock.

Plumage: front of crown slaty with darker line in center; dark line from eye to bill; alternate bars of black and ochraceous buff on back of head, about three of each; upper parts black, the feathers barred or spotted with rufous and buff and margined with slaty; under parts light cinnamon; bill at tip silvery beneath. Downy young: light buff with dark chestnut markings above. Wing 4.70 to 5.50; culmen 2.80; tarsus 1.30.

Geog. Dist.—Eastern North America north to Labrador, west to Dakota and Kansas, breeding throughout its range; winters from Virginia and Illinois southward.

County Records. — Androscoggin; common summer resident, (Johnson). Aroostook; common local summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident in suitable localities, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; quite common migrant, rare summer resident, (Morrell); common summer resident locally in northern part of county, (Knight). Waldo; summer resident, quite common locally, (Knight). Washington; plenty, breeds early, (Boardman). York; rare breeder, (Adams).

The Woodcock arrives from the south about April first, very exceptionally in the middle of March, and remains until the last of September or very exceptionally until November 30 (Bangor). Late in April or early in May visitors to the low swampy woods at evening dusk may hear a strange "peep, peep" sounding from the depths of the gray birches. Then without other warning a strange bird (to them) springs above the birches in ascending spirals with whistling wings. Finally reaching the limit of flight far up in the air he descends headlong and zigzag with a clear twitter of whistling melody, alighting at the starting point to "peep, peep" several times and again ascend in spirals. This is the "towering" or soaring of the Woodcock, or in other words it is its love song, and is repeated again and again during the mating season.

Later on a nesting site is selected, generally on some slight hummock or elevation in swampy land, and here the eggs are laid at somewhat varying dates in May, usually during the early part of the month.

While engaged in botanizing in the rear of the Maine State College, May 19, 1893, my attention was attracted to a peculiar "glass bead" which shone near by on a hummock, and going to pick this up found that it was a live Woodcock whose glistening eye had resulted in betraying it in spite of its otherwise

perfect resemblance to the surroundings. When the bird was picked up she acted much as a hen would do under similar circumstances, pecking at my hand and endeavoring to escape, but when released back she went to her four eggs. The nest was composed of grass and lined with pine needles, and was situated on a slight elevation at the foot of a small spruce sapling in a swamp. The eggs were of an ashy gray color, spotted and blotched principally toward the larger end with reddish brown and rufous, and measure 1.52 x 1.18, 1.41 x 1.14, 1.59 x 1.14, 1.65 x 1.16.

Chapman and Davie write of the eggs as being creamy or buff in color but I have seen many eggs of this species and never found any which would match either of these colors, but the eggs I have seen were all Maine eggs which may make a difference. Other Woodcock nests I have found by flushing the birds from almost under foot, but never one where the parent was so tame and acted like the one above described. Usually four eggs are laid, sometimes only three.

The incubation period I am not able to exactly specify, but judging from observation of nests already containing the complement of eggs when found would feel assured that it was at least eighteen days, though the age of the eggs found might have been such as to increase the incubation time above the eighteen days.

The birds are practically nocturnal in habits, flying at the approach of dusk to the marshes, swamps, muddy shores and meadows where they bore for worms and other insects with their long bills which seem to have very sensitive moveable tips. These holes or borings are unmistakable evidence to the initiated that a Woodcock has been feeding there. In the fall they frequent second growth birch thickets where they are best hunted by dogs. It is a sight worth seeing to see a good dog on the point, while the Woodcock (rarely so seen on account of protective coloration) crouches down, all braced to fly at the least approach nearer of the dog or the human being, absolutely

motionless, and betrayed only by the large glassy eyes. Finally to remove the tension one approaches and with a whistle up it goes, slightly circling, skimming over the tops of the birches to drop again in a safer spot, or perchance to fall dead or dying at the report of the gun.

There have been many arguments pro and con as to whether or not the whistling sound is produced by the wing of the bird or whether it is a vocal sound. I am inclined to the wing theory but am able to prove nothing definite. The birds we get in Maine in late fall are larger, slightly darker birds, which may possibly represent a local northern race.

Genus GALLINAGO Leach.

230. *Gallinago delicata* (Ord). Wilson's Snipe; Jack Snipe.

Plumage: above blackish, the feathers more or less barred, edged and spotted with buffy; wings fuscous with outer edge of outer primary and tips of greater coverts white; top of head with paler line down the middle; neck and breast ochraceous with indistinct blackish streaks; sides and under tail coverts barred with black; belly white; outer tail feathers barred black and white, inner ones black with white tips and rufous subterminal bars. Wing 5.00 to 5.40; culmen 2.85; tarsus 1.40. Tail feathers sixteen in number.

Geog. Dist.—North America, breeding from Central Maine and southern Minnesota to Hudson Bay; in winter from Illinois and South Carolina to the West Indies and South America, also locally wintering in scant numbers on Cape Cod.

County Records.—Androscoggin; common migrant, (Johnson). Cumberland; rare near Bridgton, (Mead); common, (Brock). Franklin; common migrant, (Richards). Hancock; migrant and quite common in the marshes along the coast, especially in fall, also local breeding bird of inland meadows, (Knight). Kennebec; common, (Gardiner Branch). Knox; migrant, (Rackliff). Oxford; breeds rarely, found a nest near Cold River in June, 1881, (Nash). Penobscot; locally quite common in migration, especially fall, also local through summer on certain meadows and interval lands, (Knight). Piscataquis; common migrant, (Homer). Sagadahoc; rare in spring, common in fall, (Spinney). Somerset; common migrant, rare summer resident, (Morrell). Waldo; locally common migrant, local and rare summer resident, (Knight). Washington; plenty, some breed, (Boardman).

Along the coast the species occurs during migration and not commonly from April 20 until about the middle of May, and again commonly on the marshes locally from September until well along in November. Inland about the breeding places on the interval lands and meadows they arrive in early May and depart the second week in November. When flushed they fly with a tortuous flight (the so-called zigzag flight of the sportsman) uttering a sound which is like the words "escape, escape" uttered several times in succession.

In late May and June about many of the low lands along the isolated streams of central Maine I have seen the soaring and heard the drumming of the Snipe, very often at midday though more frequently at dusk or later. They rise in spirals until far above the meadows and soar in circles, descending swiftly with a "whuu-whuu-whuu-whuu" again rising in spirals. Another cry uttered while on the ground is a "kuk-kuk-kuk". While we have the most conclusive evidence that they nest in northern Maine, the young being found while unable to fly, as well as the birds actions in other instances indicating they were breeding, I have never yet been able to find or see a Maine collected egg of the species, though the eggs have been reported as found by others.

Davie describes the nest as being placed on the ground, a mere depression in the grass or moss of a bog or meadow. The eggs are said to be pyriform shaped, grayish olive or brownish ashy colored, heavily marked with chocolate chiefly at the larger end. Three or usually four eggs are laid of an average size of 1.55 x 1.08. The food eaten by the birds is similar to that of the Woodcock, but the birds feed in rather more open situations on the average, often at night but also quite frequently during the day. During migration they occur in small bands of three to seven in most parts of the State, but are in more numerous groups locally.

Genus MACRORHAMPHUS Leach.

231. *Macrorhamphus griseus* (Gmel.). Dowitcher. Red-breasted Snipe; Gray Snipe; Gray-back; Brown-back.

Plumage of adults in summer: primaries fuscous; upper parts black or blackish, the feathers edged and barred with ochraceous buff; belly whitish; other under parts rufous, more or less barred or spotted with blackish. Plumage of winter adults: rump and tail barred black and white; upper parts brownish gray; throat and breast ashy tinged. Immature plumage: similar to winter adults above but feathers more or less edged with rufous; secondaries white edged; under parts more or less ochraceous, the darker markings obscure. Bill widened and pitted on top at tip. Wing 5.25 to 6.00; culmen 2.30; tarsus 1.30.

Geog. Dist.—Eastern North America, breeding within the Arctic Circle; wintering from Florida to the West Indies and Brazil.

County Records.—Cumberland; common, (Brock); arrives normally between May 21 and May 29 in large flocks, the majority passing in a single day, the old birds sometimes not appearing on return flight, but when they do appear they come in the latter part of July to the beginning of August and on until October 29, (1876) in diminishing numbers, (Brown, C. B. P. p. 26). Knox; summer, (Rackliff). Sagadahoc; formerly very plenty, last seen twelve years ago, (Spinney). Washington; rare, (Boardman).

As a rather general migrant along the coast this species appears in spring about the last of May in fair numbers. In the fall migration the appearance is uncertain or irregular, but when seen at all it is from late July or August until well into October. They occur in small groups or often in large flocks, feeding on the mud flats and sandy bars at low tide. They are very fond of sea-worms, small mollusks, small crustaceans and similar "between tides" forms of life.

They nest in Arctic regions, nesting in the "Fur Countries" from about the middle to the last of June. The nests are described as placed on the ground not far from the borders of small lakes and ponds, being mere grass lined depressions.

The eggs are said to be three or more often four in number, pyriform in shape, and of a grayish olive to greenish brown color, spotted with umber and black. They measure about 1.68 x 1.12.

Genus MICROPALAMA Baird.

233. *Micropalama himantopus* (Bonap.). Stilt Sandpiper; Long-legged Sandpiper.

Plumage of summer adults: ear coverts and faint line at back of head rufous; primaries fuscous; secondaries grayish with white edgings; upper tail coverts white, streaked and barred with dusky; outer tail feathers with interrupted dark bars, the inner ones with streaks of grayish or whitish; remaining upper parts blackish with light buffy or grayish borders to feathers; below white with heavy bars of dusky. Plumage of winter adults: upper tail coverts and tail white, the latter margined with grayish; other upper parts ash gray; below white with faint tinges of gray on throat, neck and sides. Immature plumage: differs chiefly in being blackish above with ochraceous margins to feathers and dirty white below. Wing 5.00 to 5.42; culmen 1.65; tarsus 1.65.

Geog. Dist.—Eastern North America, breeding within the Arctic Circle; wintering south to Bermuda, West Indies and South America.

County Records.—Cumberland; transient in autumn only, rather uncommon, (Brown, C. B. P. p. 26). Knox; not known, the record of Spinney (Auk. 1903, p. 65), being withdrawn by him. Washington; rare, (Boardman).

This is a rare local migrant along the coast in late summer, occurring from late July to early October. Mr. McFarland found the Stilt breeding at Rendezvous Lake, east of Fort Anderson, Arctic N. A., June 27. The nest was a mere depression in the ground, lined with a little grass. Four eggs are said to be laid which are pyriform in shape, light drab in color with markings of chestnut brown and purplish gray, most heavy about the larger ends of the eggs. An egg is said to measure 1.44 x 1.00. The call of the bird is a mere tweet.

Genus TRINGA Linnæus.

234. *Tringa canutus* Linn. Knot; Red-breasted Sandpiper; Ash-colored Sandpiper; Gray-back; Robin Snipe; Gray Snipe.

Plumage of adults in summer: barred and streaked black, white and rufous above; tail ashy gray with very narrow margins of whitish to the feathers; lower belly whitish; upper belly, breast, fore neck and throat rufous. Plumage of winter adults: above brownish gray; upper tail coverts barred

with black and white; breast and sides dark barred; otherwise similar. Immature plumage: above pale brownish gray, the feathers of the back, scapulars and wing coverts with whitish edgings and dusky submarginal markings; upper tail coverts with dark bars; tail feathers narrowly margined with white; below white or whitish with streaks of dark on breast and flanks. Wing 6.40 to 6.78; culmen 1.35; tarsus 1.28.

Geog. Dist.—Northern hemisphere, nearly cosmopolitan; breeding range within Arctic Circle; wintering on American shores from Florida to South America.

County Records.—Cumberland; transient, generally uncommon, occurs between May 24 and June 11 in spring, and in fall in August and September, (Brown, C. B. P. p. 26). Hancock; formerly common among the outer islands and along the coast in August and September, now very seldom seen, (Knight). Knox; migrant, (Norton). Sagadahoc; very rare, (Spinney). Waldo; seldom now, (Knight). Washington; rare, (Boardman); plenty in fall, (Clark).

Though formerly common as a migrant along the coast in late May, early June, August and September, the Knot is a bird which is now annually seen in fewer numbers along our coast. Locally some seasons it is still seen in considerable numbers. They occur in small flocks, feeding on various small mollusks, crustaceans and sea-worms along the beaches, over the sea-weed of half-tide ledges or among the pebbly stretches exposed at low tide.

I have found them most plentiful on the outer islands and half-tide ledges of Penobscot Bay in past years. Their cry on taking flight is a peculiar whistled "waquit". They return repeatedly to good feeding grounds, merely circling away and back when shot at, so that a flock is often annihilated.

Little seems known about their nesting. An egg said to have been collected near Fort Conger by General Greely is described as light pea green, closely spotted with brown in small specks about the size of a pinhead and measuring 1.10 x 1.00 (Auk. 2, p. 313). Eggs stated to be those of this species are described and figured in *Birds Nesting in Northwest Canada*, these eggs being stated to come from Raedodavmsi, Iceland.

Genus ARQUATELLA Baird.

235. *Arquatella maritima* (Brunn.). Purple Sandpiper; Winter Peep; Rock Snipe; Winter Snipe.

Plumage of summer adults: head dusky with buffy streaks; upper parts black with buffy margins to the feathers of light and darkish shades; greater wing coverts white margined; wings and upper tail coverts fuscous; inner tail feathers fuscous, outer ones gray; throat and breast brownish gray streaked with darker; sides and under tail coverts streaked with brownish gray; belly white. Plumage of winter adults: above sooty with purplish gloss; scapulars and wing coverts with terminal dark gray borders; chest brownish gray; breast and belly whitish, otherwise similar to summer. Immature plumage: dusky above with whitish borders to the scapulars and wing coverts; otherwise similar to other plumage. Wing 4.90 to 5.30; culmen 1.30; tarsus 0.95.

Geog. Dist.—Northern portion of northern hemisphere; on American side migrating south to the Great Lakes and upper Mississippi Valley and along the Atlantic coast; casual in Florida; breeds within the Arctic Circle.

County Records—Cumberland; fairly common in winter, (Brock). Hancock; one taken at Saddleback Ledge, August 19, 1896, (Knight). Knox; winter, (Rackliff); one taken at Metinic Reef, August 11, 1902, which was a female in essentially winter plumage, (Norton). Sagadahoc; common in winter, (Spinney). Washington; abundant in winter, (Boardman).

This species occurs along the coast in winter, being locally quite often seen in small sized flocks, usually from November until March or early April. It is occasionally found in August and September. Dr. Richardson reports that they breed abundantly on the Melville Peninsula and on the shores of Hudson Bay. The nest is described as a mere depression in the soil, scantily lined with grass, in which four pyriform eggs are laid. The eggs are clay color, heavily marked with rufous brown, especially at the larger end.

Genus ACTODROMAS Kaup.

239. *Actodromas maculata* (Vieill.). Pectoral Sandpiper.

Plumage of summer adults: general blackish color above, the feathers being bordered with ochraceous buff; the longest middle tail feathers pointed and buffy margined; outer tail feathers shorter, brownish gray with white margins; below white, the throat and breast so heavily streaked with black

and buffy as to appear these colors. Plumage of winter adults: differs chiefly in being bordered above with rufous and with buffy tinge to the breast. Immature plumage: differs chiefly in having rounded light buff tips to the upper feathers. Wing 5.10 to 5.60; culmen 1.18; tarsus 1.05.

Geog. Dist.—North America, breeding in Arctic regions; migrating south through the United States and wintering in the West Indies and South America.

County Records.—Androscoggin; common at Sabattus pond in October, 1897 and 1899, (C. D. Farrar). Cumberland; transient in autumn only, arriving in early August or sometimes late July, and departing in October, common, (Brown, C. P. B. p. 26). Franklin; rare migrant, (Sweet). Knox; (Rackliff). Oxford; not common at Norway in autumn, (Verrill, L. B. N.). Piscataquis; rare migrant, (Homer). Sagadahoc; common in fall, (Spinney). Somerset; quite common migrant, one shot November 10, 1898, (Morrell). Washington; common in fall, (Boardman).

A fall migrant which is general and common along the coast from August to October, while inland it is likely to occur in almost any section of the State during the same season. Spring records seem rare. They frequent salt marshes and meadows, feeding in scattered array but migrating in flocks.

Their food is similar to that of the other Sandpipers, perhaps more noticeably consisting of insects however. The male bird is said during the breeding season to inflate its breast and throat to a large size and utter a deep, hollow resonant note (Nelson). When frightened into flight when feeding they utter a rasping whistle. Murdock records it as breeding at Point Barrow, Alaska. The nests contained four eggs each, these being of a drab color, sometimes greenish tinged, and spotted with umber brown. The average size is 1.45 x 1.04.

240. *Actodromas fuscicollis* (Vieill.). White-rumped Sandpiper; Bonaparte's Sandpiper.

Plumage of summer adults: above black with rufous edgings to feathers; rump fuscous with lighter edgings; upper tail coverts white, sometimes slightly tinged with grayish markings; central tail feathers fuscous, outer ones gray; below white with strong streaks of blackish on the neck, breast and sides and more or less ochraceous tinged spots in same places. Plumage of winter adults: differs from summer plumage in being brownish gray above with rather faint and smaller darkish streakings, and marks below duller and less distinct. Immature plumage: differs in having the feathers

of the upper parts tipped with small roundish white markings. Wing 4.85 to 5.12; culmen 0.96; tarsus 0.93.

Geog. Dist.—Eastern North America, breeding in Arctic regions; in winter ranging southward to the eastern coast of Patagonia and Falkland Islands.

County Records.—Cumberland; transient, in autumn common, rare in spring, appearing in July on its southward journey and found throughout October, in spring found but twice, May 30, 1881 and May 29, 1881, (Brown, C. B. P. p. 27). Knox; migrant, (Rackliff). Oxford; (Smith, F. & S. 20, p. 66). Penobscot; taken at Bangor, October 23, 1881, (Merrill, B. N. O. C. 7, p. 191). Piscataquis; seen in 1900, (Ritchie). Washington; rare, (Boardman); quite plenty in fall of 1904, (Clark).

Along the coast the species occurs locally common as a summer or autumn transient from late July to late November, and occasionally inland at the same season. It rarely occurs in spring in late May. They are found in small flocks along the beaches or about small ponds inland. In the northern home the nest is a mere depression in the earth, lined with a little grass or leaves and four eggs are said to be usually laid.

The eggs are described as olive brown, spotted with chestnut brown and black, and averaging in size 1.37 x 0.94, (Davie). They occur in small bands, either by themselves or associated with allied species, feeding on the various insect and crustaceous life of the shore, marsh and beach. They are rather tame and when flushed fly only a short distance uttering a "tweet, tweet" on flying and alighting.

241. *Actodromas bairdii* Coues. Baird's Sandpiper.

Plumage of summer adults: crown, back and scapulars spotted or streaked in the former, with mixed brownish black and pale buff; median upper tail coverts fuscous with whitish margins; outer tail feathers grayish, the inner fuscous with whitish margins; below white with buffy washing on breast and fuscous spots and streaks; white superciliary line. Plumage of winter adults: buffy grayish brown above with faintish medial dusky streaks; feathers of upper tail coverts dusky with light buffy terminal borders; below white with strong buffy washings on sides of neck, sides of breast and chest. Immature plumage: the back, scapulars and wing coverts with rounded whitish tips to the feathers, otherwise not different from winter plumage. Wing 4.60 to 4.95; culmen 0.94; tarsus 0.95.

Geog. Dist.—Chiefly the interior of North America and the western portions of South America south to Chili and Patagonia in winter; breeding

range Alaska, Barren Grounds and Arctic America; rare on Atlantic coast and not known on the Pacific coast south of British possessions.

County Records.—Cumberland; rare, (Brock); a specimen was shot at Scarboro, September 9, 1875, (Brown, C. B. P. p. 27); one in fall of 1901, (Lord). Knox; rare visitant, (Norton). Oxford; taken near Upton, (Brewster, B. N. O. C. 1, p. 191). Penobscot; I took a female on the Mount Hope Road, near Bangor, at a pool of water November 1, 1881, just after a severe storm, (Newell Eddy). Waldo; one shot on Warren Island, September 20, 1885, (Howe, J. M. O. S. 1900, p. 28).

As a rare or casual fall migrant this species is rarely found in scattered localities. In the Barren Grounds they are said to nest in late June, laying four eggs in a mere depression in the ground, lined with a little grass. The eggs are described as buff or clay colored, spotted with chestnut and brown, most of the markings being said to be rather fine and segregated at the larger ends of the eggs. An egg is said to measure 1.30 x 0.93 (Ridgw.).

242. *Actodromas minutilla* (Vieill.). Least Sandpiper; Least Peep; Sand Oxeye; Meadow Oxeye.

Plumage of adults in summer: above black with very broad rufous margins to the feathers; rump and upper tail coverts black with white edgings to the outer tail coverts; central tail feathers dark, the outer ones gray; below white, somewhat buffy on breast and streaked with dusky on lower neck and chest. Plumage of winter adults: brownish gray above with darkish centers to the feathers; breast grayish with faint streaks, otherwise below white. Immature plumage: breast not streaked; feathers of back with rounded light tips.

Geog. Dist.—North and South America, breeding from Sable Island, Nova Scotia, north to high latitudes; winters from the Gulf States southward through South America.

County Records.—Cumberland; transient, abundant, most numerous in August but once taken as late as October 15, (Brown, C. B. P. p. 27). Hancock; migrant, often common in late July and August, also in May and more rarely in June among the islands and along the coast, (Knight). Kennebec; (Dill). Knox; summer, (Rackliff). Penobscot; rare about the streams and ponds, often associated with the Semipalmated Peep, in August, (Knight). Piscataquis; migrant, (Homer). Sagadahoc; common in summer, (Spinney). Somerset; quite common migrant, (Morrell). Waldo; migrant in late July, August and May, (Knight). Washington; abundant in summer, (Boardman).

This species is common along the coast from about the last week in July through August, a few remaining even until late October, while in spring they occur generally in May and rarely to mid June. They are general about the various interior bodies of water in fall, though not to be called common inland.

They are tame unsuspicious little birds, feeding along the shores and in the muddy flats and marshes in fair sized flocks, often intermixed with their friends, the Semipalmated Sandpipers. Their food consists of small worms, insects and small mollusks. When flushed they utter a "tweet, tweet" and fly a short distance in a compact flock. Dr. Dwight (Mem. Nutt. Orn. Club, 2, p. 18) writes of this species as having a love song which is delivered on the wing and which consists of a repetition of two syllables uttered very rapidly with an intonation like the spring note of our common toad. He states that on Sable Island the nest is placed in the dry turf and that the males assist in incubating the eggs. They remain upon the nests until nearly trodden upon when away they go with every appearance of being badly crippled until, having diverted attention from the nest, they rapidly recover.

The eggs are large for the size of the species, measuring 1.15 x 0.83 (Ridgw.). They are pale grayish buffy or pale brownish thickly spotted with deep chestnut and dull purplish gray.

Genus PELIDNA Cuvier.

243a. *Pelidna alpina pacifica* (Coues). Red-backed Sandpiper; American Dunlin; Black-bellied Sandpiper; Ox Bird; Leadback; Blackbreast; Redback.

Plumage of summer adults: above black, the feathers broadly margined with rufous; wings grayish; below white with a black patch in middle of belly and dusky streaks on breast. Plumage of winter adults: brownish gray above with buffy margins to the wing coverts; middle tail coverts fuscous; breast ashy with faint streaks; other lower parts white. Immature plumage: blackish above with rounded lighter tips to the feathers; belly spotted and breast faintly streaked with black; breast with buffy tinge. Wing 4.50 to 5.00; culmen 1.60; tarsus 1.05.

Geog. Dist.—North America, breeding in Arctic latitudes and wintering from Florida southward; also Eastern Asia.

County Records.—Cumberland; transient, rare in spring, common in autumn, (Brown, C. B. P. p. 27). Knox; migrant, (Rackliff). Washington; rare, (Boardman).

Seemingly rather a local migrant along the coast in October and in spring very rare indeed, occurring during the very last days of May. It has been found nesting on the Arctic coast, Melville Peninsula and in Southern Greenland.

The nest is said to be built near lakes and ponds and is a mere hollow in the ground. The four eggs usually laid are described as dull brownish buff or clay color, spotted and blotched with chestnut, chiefly about the larger ends. They average 1.43 x 1.01 (Davie).

Genus EROLIA Vieillot.

244. *Erolia ferruginea* (Brunn.). Curlew Sandpiper.

Plumage of summer adults: above mixed blackish and rusty; head, neck and under parts (except anal region and under tail coverts) deep cinnamon rufous or chestnut. Plumage of winter adults: brownish gray above, the feathers with faint dusky centers; chest faintly streaked with grayish; superciliary stripe, upper tail coverts and other lower parts white. Immature plumage: dusky above with whitish tips and buffy edgings to the feathers of the back and scapulars; lesser and middle wing coverts with terminal borders of dull buff; chest and sides washed with buff. (Ridgw.). Wing 4.85 to 5.15; culmen 1.49; tarsus 1.18.

Geog. Dist.—Old World; occasional in Ontario, Nova Scotia, Maine, Massachusetts, Long Island and Alaska.

County Records.—Cumberland; one was killed at Pine Point, September 15, 1881, by Charles H. Chandler, (Purdie, B. N. O. C. 7, p. 124).

We have only the one record for Maine, another one erroneously credited to the State being really taken at GRAND MENAN, NEW BRUNSWICK. Writers of the past, either through ignorance, or because through covetousness they had really come to believe Grand Menan belonged to Maine, have persistently credited Grand Menan birds to this State.

Mr. Boardman assured me that his specimen was not taken in Maine, as the past writers were so persistent in having us

believe, but was actually taken at GRAND MENAN, NEW BRUNSWICK.

The species is said to breed in Norway, Sweden, Finland and Greenland. The nest is described as a hollow in the ground near a lake or pond, and four greenish buff eggs, spotted with chestnut brown, are usually laid. Their average size is 1.50 x 1.04 (Davie).

Genus EREUNETES Illiger.

246. *Ercunetes pusillus* (Linn.). Semipalmated Sandpiper; Sand Oxeye; Peep.

Plumage of summer adults: general color above fuscous with brownish gray margins to the feathers; rump brownish; tail feathers brownish gray, the inner ones darkest; below whitish with dark streaks or spots on breast. Plumage of winter adults: uniform brownish gray above with darker centerings to the feathers; below white. Immature plumage: blackish above with buffy and rufous tips to the feathers; breast buffy tinged; otherwise like adults. To be told from the closely associated Least Sandpiper by the partially webbed feet. Wing 3.65 to 4.00; culmen 0.78; tarsus 0.87.

Geog. Dist.—Eastern North America, breeding far north in Arctic regions; winters from the Gulf States to South America.

County Records.—Androscoggin; fairly common migrant, (Johnson). Cumberland; rare near Bridgton, (Mead); common, (Brock). Hancock; common along the coast in August and September, rare in May, (Knight). Knox; common in fall among the islands, (Knight). Penobscot; frequent in fall, associated with the Least Sandpiper along the shores, (Knight). Sagadahoc; common in fall, (Spinney). Somerset; quite common migrant, (Morrell). Waldo; common along the coast in August and September, occasional inland, (Knight). Washington; common, (Boardman).

These little birds occur as migrants in the fall through August, September and occasionally into October, being common along the coast and locally not rare inland. In the spring a few occur in May.

They are unsuspicious little birds, feeding in flocks along the sandy beaches, dodging the incoming waves and suddenly taking flight without seeming cause, circling around and often alighting at the same place they so suddenly left without seeming good cause. Their cry is a "tweet, tweet" or "peep, peep"

softly uttered. When alighting the whole flock seem to pitch simultaneously, holding their wings upstretched a mere second after they strike the sand, and then folding them.

The food consists of sand fleas, small crustaceans, sea-worms and similar small forms of life which are also eaten by their close associates, the Least Sandpipers.

In the north a mere hollow does duty for a nest in which four eggs are laid, usually not far from the water. The eggs are laid in early June in the Fur Countries. They are described as clay or grayish buff, boldly spotted or sometimes finely dotted with brown and umber, the spots being thickest about the larger end. The measurement of an egg is 1.22 x 0.83.

Genus CALIDRIS Cuvier.

248. *Calidris arenaria* (Linn.). Sanderling; Surf-snipe; Ruddy "Plover"; Beach Bird.

Plumage of summer adults: above rusty, spotted with blackish in center of feathers and tipped with white; wings and wing coverts fuscous, the greater coverts white tipped; outer web of inner primaries white; tail grayish with feathers white margined; below white with rufous tinge and blackish spots on throat and breast. Plumage of winter adults: like preceding except that above the color is pale brownish gray and below white. Immature plumage: feathers of upper parts white-tipped and without rusty color; under parts white, unspotted. Toes only three, which character distinguishes this species from all other Sandpipers or Snipe. Wing 4.75 to 4.97; culmen 0.98; tarsus 0.98.

Geog. Dist.—Cosmopolitan, breeding in Arctic regions; in winter on American side ranging south to Chili and Patagonia.

County Records.—Cumberland; transient, abundant in autumn, late July to November 5, the only spring specimens known were shot at Old Orchard, May 30, 1882, (Brown, C. B. P. p. 27). Hancock; fall, not many, (Knight). Knox; migrant, (Rackliff). Penobscot; a specimen was killed at High Head, near Bangor, some years ago, (Crosby). Sagadahoc; common in fall, (Spinney). Waldo; one seen in September, 1883, (Howe, J. M. O. S. 1900, p. 29). Washington; common, (Boardman).

General along the coast in fall migration from July through September, and sometimes to November 5, very rare in spring, known only once in late May, and exceedingly rare inland.

It is a true beach bird and frequents sandy wave washed shores, often associated in flocks with the Semipalmated and Least Sandpipers. In the vicinity of Hudson Bay they are reported as nesting in June, laying four light olive brown eggs which are spotted with darkish brown. The nest is a mere grass-lined hollow in the earth. An egg is said to measure 1.41 x 0.91 (Ridgw.). The food and habits do not vary from those of the Least and Semipalmated Sandpipers in general.

Genus LIMOSA Brisson.

249. *Limosa fedoa* (Linn.). Marbled Godwit; Brown Marlin; Doe Bird.

Plumage of adults: above dusky or blackish with buffy streaks on head and neck and the feathers of back tipped or barred with same; the inner web of outer primaries and both webs of the inner ones pale buff with black dots; tail distinctly barred with black; throat whitish; elsewhere below pale buff with dusky bars on breast, sides and flanks; bill dark at end, yellowish at base and curved slightly upward. Immature plumage: differs in being scantily barred below except on flanks and tail coverts. Wing 8.50 to 8.95; culmen 3.75 to 5.00; tarsus 2.85.

Geog. Dist.—North America, breeding in the interior from Iowa and Nebraska to Manitoba and the Saskatchewan; in winter south to Guatemala, Yucatan and Cuba.

County Records.—Cumberland; one taken at Pine Point, about August 8, 1891, by Harry Crocker, (Brown, Auk 17, p. 386); one taken at Scarboro Marsh, May, 1884, (Brown, Auk 2, p. 385); a female in my collection was shot at Scarboro Beach, August 16, 1904, by Geo. H. Cushman, (Brock, Auk 1907, p. 94). Sagadahoc; one taken at Popham Beach, September 13, 1900, (Spinney).

This species has been four times taken in Maine, being only of casual occurrence. Colonel Goss records this species as inhabiting the salt and fresh marshes and moist grounds of the prairies, feeding upon crustacea, insects, worms, larvae, etc. Its flight, he says, is easy but not rapid and in alighting it raises its wings over its back as it touches the ground.

The eggs are four in number, creamy buff, spotted sparingly with brown and umber, and measure 2.27 x 1.60 (Davie). The nest is on the ground, being a mere grass lined hollow.

251. *Limosa haemastica* (Linn.). Hudsonian Godwit;
Doe Bird; Ring-tailed Marlin.

Plumage of summer adults: back blackish with buffy markings; head and neck chestnut, streaked with dusky; lower parts dark chestnut with dusky bars; rump, upper tail coverts and axillars dusky, with a band of white crossing the upper tail coverts; tail not barred, black with white tip and base. Plumage of winter adults: above brownish gray; head, neck and under parts whitish, shaded on breast with brownish gray. Immature plumage: back brownish gray with subterminal dusky and terminal buffy edgings; below grayish verging into white on the belly. Wing 8.00 to 8.50; culmen 3.15; tarsus 2.35.

Geog. Dist.—Eastern North America, breeding in the far north; in winter migrating through South America to Patagonia.

County Records.—Cumberland; transient in autumn, generally rare, (Brown, C. B. P., p. 28). Sagadahoc; Capt. H. L. Spinney has taken this species at Popham Beach where it is not rare, (Swain, J. M. O. S. 1900, p. 33). Washington; rare, (Boardman).

Seemingly this species occurs only as a rare fall migrant along the coast. In the Anderson River region it makes a slight nest on the ground and in early June deposits four deep olive brown or hair brown eggs which are spotted with dark brown. They measure 2.20 x 1.42 (Ridgw.).

Genus TOTANUS Bechstein.

254. *Totanus melanoleucus* (Gmel.). Greater Yellow-legs; Greater Telltale; Greater Tattler; Stone Snipe; Long-legged Tattler.

Plumage of summer adults: above blackish with light streaks on head and neck and light spots and bars on the back; upper tail coverts and tail white, barred with black; below whitish with spots of black on breast and bars of same on flanks. Plumage of winter adults: above brownish gray with whitish edgings to back feathers; scapulars and wing coverts spotted darkish and whitish; breast and sides only slightly marked with blackish. Immature plumage: more brownish above with a more buff tinge to the lighter colored markings above. Wing 7.50 to 7.80; culmen 2.25; tarsus 2.55.

Geog. Dist.—North America; breeding from Iowa, Minnesota, Anticosti and rarely northern Illinois, northward, chiefly breeding in the far north; winters from the Gulf States to Chili and Patagonia.

County Records.—Androscoggin; fairly common migrant, (Johnson). Aroostook; I have every reason to believe it breeds along the Woolastook,

(Knight). Cumberland; rare near Bridgton, (Mead); common, (Brock). Franklin; rare migrant, (Richards). Hancock; common migrant, (Dorr). Kennebec; they have been shot here in abundance, (Powers). Knox; summer, (Rackliff). Oxford; migrant, (Rackliff). Penobscot; occurs in fall and spring, formerly frequent, rare now, (Knight). Piscataquis; migrant, (Homer). Sagadahoc; common in fall, (Spinney). Somerset; common migrant, birds were seen during the summer months of 1895, (Morrell). Waldo; late summer and early fall, (Knight). Washington; common spring and fall, (Boardman).

Though this species has not yet actually been detected nesting in Maine there seems no reason to doubt that it does nest in small numbers in the Woolastook Valley where I have observed it in early July. Ordinarily the species appears from the north in early August, more seldom in late July, and from then to late October or early November it may be found locally inland and quite generally along the coast. In the spring it is somewhat rare and occurs in late April to mid May.

They are rather noisy birds giving vent to a loud penetrating "wheu-wheu-wheu-wheu" which never fails to attract attention from all hearers. They have been accused by sportsmen of purposely making noise to put other game on the alert when danger approaches.

The eggs are described as grayish white, marked with spots of dark brown and obscure markings of lilac which are scattered over the entire surface but most numerous at the larger end of the egg. The nest is a mere hollow with a little grass lining. The species usually occurs in small flocks of two or more, usually not over five or six individuals. They frequent the shores of rivers, streams, ponds, pools and similar spots, wading in the water in search of snails, insects, worms and other sub littoral life. They come readily to decoys.

255. *Totanus flavipes* (Gmel.). Yellow-legs; Summer Yellow-legs; Lesser Yellowshanks; Wandering Tattler.

Plumage of summer adults: head and neck streaked black and white; upper parts brownish gray with blackish centers and whitish tips to the feathers of the back and scapulars; upper tail coverts and tail white or

whitish, barred with blackish; below white with spots and streaks on the breast and bars on the flanks of blackish. Plumage of winter adults: brownish gray above with whitish spots on sides of feathers; bars of tail grayish; breast only lightly streaked with dark. Wing 6.00 to 6.70; culmen 1.40; tarsus 2.10.

Geog. Dist.—North America; breeds from Ontario Co., N. Y., Minnesota and northern Illinois (rarely in the U. S.) northward, breeding usually in Arctic regions; winters from the Gulf States to Patagonia.

County Records.—Androscoggin; (Pike); one at Sabattus Pond, October, 1898, (C. D. Farrar). Cumberland; common, (Brock). Franklin; rare migrant, (Sweet). Knox; (Rackliff). Oxford; not common at Norway, (Verrill, L. B. N.). Penobscot; (Hardy). Sagadahoc; common in fall, (Spinney). Somerset; migrant, (Morrell). Washington; common only in fall, (Boardman).

This species in the fall usually appears in late July and remains until early October or occasionally as late as Oct. 17 (Brown). It appears to be much more seldom observed or reported than the preceding species from which it is readily distinguished by the smaller size. They are not known to or is there any reason for suspecting that they breed in Maine.

In Alaska, the MacFarland and Anderson River regions they lay their eggs in a mere depression on the ground, often at the foot of a small bush. The set consists usually of four eggs which are described as being light drab, clay, buffy or cream colored, spotted boldly with splashed blotches of chocolate, umber, brown and blackish, the markings being very thick or even confluent at the larger end of the eggs, (Davie). The sizes range from 1.58 to 1.78 long by about 1.16 broad. In habits, food etc. there is nothing to distinguish this species from the Greater Yellow-legs.

Genus HELODROMAS Kaup.

256. *Helodromas solitarius* (Wils.). Solitary Sandpiper; Solitary Tattler; American Green Sandpiper.

Plumage of summer adults: olive fuscous above, the head and neck streaked with whitish; the back often with a greenish tinge to the brownish gray and spotted with white; lateral tail coverts sometimes barred, the upper ones with fine light spots at the sides; the two central tail feathers

fuscous, the others white with black bars; below white with black streaks on the breast and bars on the sides; axillars barred with black. Plumage of winter adults: ashy above with fewer streaks on head and neck and less distinct light spots on back; less distinctly streaked with brownish gray on breast. Immature plumage: grayish brown above with numerous sprinkled specks of buff; sides of head and neck grayish. Wing 5.00 to 5.50; culmen 1.25; tarsus 1.35.

Geog. Dist.—North America, breeding rarely in the northern tier of states and more generally in Arctic regions; wintering in South America south to Argentine Republic and Peru.

County Records.—Androscoggin; common migrant, (Johnson). Aroostook; breeds beyond doubt in the Woolastook Valley, (Knight). Cumberland; common, (Brock). Franklin; common migrant, (Richards). Hancock; breeds rarely, common migrant, (Knight). Kennebec; quite common, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; not common at Norway, (Verrill, L. B. N.). Penobscot; common migrant, they breed along Pushaw Stream and in other portions of the county, (Knight). Piscataquis; rare, (Homer). Sagadahoc; not plenty, a few in fall, (Spinney). Somerset; common migrant, (Morrell); a few breed in the north, (Knight). Waldo; common spring and fall, a few about the streams in summer, (Knight). Washington; common, (Boardman).

As a common and quite general migrant the species occurs in August to October and again in May, while as a very local and not common breeding bird the species remains about several streams, ponds and lakes of northern Maine. No nests have yet been found in spite of very careful search by the author and others in instances where it was positively known that the birds must be breeding, but the evidence of newly hatched young just able to run or in other stages but unable to fly is proof positive of their breeding in Maine. Where do they nest?

I have carefully searched all sites which might be expected to be occupied by a pair of the birds which at the time unquestionably had eggs near by, for some ten days later young just able to run were found. Walter Raine recently recorded the finding of eggs of this species by a collector in the north in deserted nests of other birds in trees and bushes. This is a well known habit of the closely allied Green Sandpiper of Europe which the authorities there declare always nests in other birds deserted nests and never on the ground. If this be a

rule with the Solitary Sandpiper it explains why I never found their nests, as though there were dozens of deserted nests of Red-wings and Grackles near the spots where I felt sure their nests must be I never thought of looking for the eggs in such places. When near the breeding locality the birds are rather uneasy and utter a low peevish call, especially when with young. Ordinarily they are very silent, uttering a slight whistle when flushed.

During the nesting season they frequent just such shores as are liked by the Grackles and Red-wings along grassy meadows and boggy places. Often a Solitary Sandpiper may be seen standing on the top of a stump or log which projects above the surface of the water. They eat worms, insects, small crustaceans and similar material. They sometimes at least seek their food by wading in shallow running water.

Though eggs have been described as belonging to this species the author prefers to withhold judgment regarding them and refer the reader elsewhere for their description until we know more about the actual breeding of the species. The downy young are a general grayish buff above with darker suffusions on the back; a darker line through each eye from bill to nape; darkish crown line; below white with slight dusky suffusion on flanks.

Genus SYMPHEMIA Rafinesque.

✓ 258. *Symphemia semipalmata* (Gmel.). Willet.

Plumage of summer adults: above brownish gray with dark streaks on head and neck and blackish bars on back; basal part of primaries and the secondaries for most part white; upper tail coverts white with darkish bars; middle tail feathers ashy, faintly barred; outer tail feathers lighter with grayish mottlings; below white with heavy bars of dark gray on breast and sides. Plumage of winter adults: brownish gray above without bars on back and tail; below white with a grayish washing on breast; axillars black. Immature plumage: above brownish gray with buffy margins to feathers of back; sides buff tinged and grayish mottled. Wing 7.60 to 8.70; culmen 2.20; tarsus 2.40.

Geog. Dist.—Eastern North America from New Jersey to Florida in breeding season; wintering south to the West Indies and Brazil; very casual north to Maine; accidental in Bermuda and Europe.

County Records.—Cumberland; rare, (Brock). Knox; rare in summer, (Rackliff). Sagadahoc; quite rare, one taken October 25, 1896, (Spinney). Washington; rare, (Boardman). York; received one in 1902 which was taken in Biddeford, (Lord).

While specimens of this bird are taken occasionally we are not warranted in regarding it as rather than a mere straggler to our Maine coast, its proper habitat being south of our limits. They breed commonly along the Gulf Coast of Florida, laying the eggs in May and June, and breeding in what might be termed a loosely aggregated colony sometimes numbering hundreds of individuals. They breed not rarely on Cobb's Island, Virginia, concealing their nests in the tall grass of the salt marshes.

The nest is a mere grass lined depression in the ground but usually concealed in the grass or other vegetation. Four eggs from Long Island, South Carolina, May 25, 1895, were in a nest on a sand hill placed in a bunch of wild oats. These eggs were dark olive brown with marks and toward the larger end heavy blotches of umber brown and black and washings of lilac. Another type of eggs has a greenish white ground color with similar markings. These measure 2.06 x 1.50, 2.05 x 1.50, 2.10 x 1.50, 2.12 x 1.54.

When with eggs or more especially young these birds are very noisy and persistent, hovering about with the incessantly repeated cry sounding like "willy-will-willy." They frequent beaches and marshes, feeding on various worms and insects.

Genus PAVONCELLA Leach.

260. *Pavoncella pugnax* (Linn.). Ruff; Reeve.

Plumage of adult male: a large ruff around neck of varying colors, being chestnut, glossy black, whitish or ochraceous, and a cape of glossy black, ochraceous, or whitish; the colors of cape and ruff being exceedingly variable, either plain, streaked or barred; three outermost tail feathers plain, the rest barred; varied black, buff and gray above with oblique bars on scapulars and tertials; sides of rump white. Plumage of adult female: no ruff or cape; barred with blackish, buff, white and rusty; belly and lower

tail coverts usually white. Immature plumage: back and scapulars brownish black with burr of ochraceous borders to the feathers; head on top ochraceous, streaked with black; below plain buffy forwards, whitish toward rear, (Ridgw.). Wing 6.40; culmen 1.25; tarsus 1.75. (Ridgw.).

Geog. Dist.—Northern parts of Old World; casually straggling to Maine, Massachusetts, Ontario, Ohio, Long Island and New Jersey.

County Records.—Cumberland; a female taken at Scarboro, April 10, 1870, (Smith, F. & S. 20, p. 85). Knox; a female taken at Camden, September 14, 1900, by Sidney Clark, (Thayer, Auk 1905, p. 409). Oxford; a young female taken at Upton, September 8, 1874, (Brewster, B. N. O. C. 1, p. 19).

The three specimens taken in Maine all were females. Another specimen taken by Mr. Boardman at Grand Menan, New Brunswick, has been most persistently cited as a Maine specimen in spite of many subsequent corrections.

The male birds are adorned with a most peculiar and noticeable ruff and cape which is of wonderfully great individual variation in color, while the female bird, called Reeve, is without this splendor. The males are most strenuously pugnacious in the mating season and are said to indulge in most protracted fights with one another.

The four eggs are said to be laid in a slight nest of grass placed on a slight elevation among the grass in swamps and marshes. They are said to breed more or less commonly in England, Scotland, Scandinavia, Denmark and Lapland. The eggs are oblong pyriform shape, of an olive or grayish green ground color, rather heavily marked and blotched with umber and blackish brown. Davie gives measurements of four eggs in his cabinet from England as 1.64 x 1.17, 1.79 x 1.20, 1.64 x 1.18, 1.75 x 1.12.

Genus BARTRAMIA Lesson.

261. *Bartramia longicauda* (Bechst.). Bartramian Sandpiper; Upland Plover; Field Plover; Grass Plover; Prairie Pigeon; Prairie Snipe.

Plumage of adults: head and neck streaked with black and buffish; back and wing coverts brownish with ochraceous or buffy edging and black bars and spots; primaries fuscous, outer primary white barred; two middle tail

feathers brownish gray, the others light buff, all barred with black; below white, washed with buff on breast and sides and both streaked with black. Immature plumage: back dusky with distinct buff margins to feathers; streaks on breast less strong; buff of upper parts deeper. Wing 6.45 to 7.00; culmen 1.12; tarsus 1.98.

Geog. Dist.—Eastern North America to the Rocky Mountains; breeding north to Alaska and Nova Scotia and southward to Kansas and Virginia locally; wintering south through South America to Brazil and Peru; straggler to Europe.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Kennebec; rare, (Robbins). Knox; rare visitant, (Norton). Oxford; common, breeds, (Nash). Penobscot; common migrant, rare summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; a few in early fall, (Spinney). Somerset; quite common summer resident, (Morrell). Waldo; seemingly not common, (Knight). Washington; accidental, (Boardman).

Though this species formerly occurred commonly during the migrations and was not rare as a summer resident of various portions of the State, it is now decidedly less common and the number of breeding birds which occur in the State are very few. Their favorite haunts are grassy fields and pastures, and here they may be found during the migration and breeding seasons.

The first arrivals appear about April 15 and the last lingerers are gone by September 16. During the breeding season the birds seem to prefer with us the grassy bush interspersed pastures, and here in late May the passer by may hear a peculiar long drawn out "wh-e-e-e-e-e-e-e-e-e-o-o-o-o-o" uttered in a clear whistling tone. Search reveals the utterer of this call perched on a fence or running along the ground, usually the former.

Search may result in flushing the female from almost under foot, and the slight grassy lined hollow at the foot of a small bush or in the grass revealed with its four or five treasures, usually four, placed all point inward. The color of the eggs is pale clay with numerous spots and blotches of umber, reddish brown, yellowish brown and black which are thickest toward the larger end and where they often form confluent blotches.

Four eggs found June 6, 1884 in a nest under a small bush measure 1.86 x 1.29, 1.82 x 1.34, 1.86 x 1.30, 1.90 x 1.30. When they have young or when the female has time to sneak unobserved away it is rather difficult to locate the nest or the offspring. The birds keep up a constant "quitty-quit-it" and use every endeavor to attract attention to them alone.

In late summer little family groups of five to seven birds may be found feeding in the various fields, and seemingly realizing that the hunting season is at hand they are now very wary. Practically the only way to shoot them is to have one person hide and another flush the birds from the opposite side, giving the concealed person a shot as they fly over him. They utter the peculiar jerky call of alarm which is but little different from the spring alarm note. They also utter a still different modification of this same call at times when flying overhead in migration, and on many a pleasant autumn evening have I heard "quitty-quit" floating down from overhead as I stood in my garden and thought as the mellowed tones reached me that the "Plovers" were going southward.

It seems highly probable that the species in question is one of the most beneficial birds we have. They frequent uplands and fields and feed almost entirely on grasshoppers and crickets in late summer, consuming millions of them. They also eat various other species of insects and larvae.

Genus TRYNGITES Cabanis.

262. *Tryngites subruficollis* (Vieill.). Buff-breasted Sandpiper.

Plumage of adults: primaries fuscous, the inner half of their inner webs speckled with black, a distinguishing mark of the species in all plumages; general color above pale grayish brown with darker centers to feathers of the back; inner wing coverts marked with black and white; middle tail feathers fuscous, the outer ones lighter, marked with black; below ochraceous buff, tipped with whitish and with concealed darker markings. Immature plumage: feathers of back bordered with whitish; breast paler. Wing 5.00 to 5.55; culmen 0.77; tarsus 1.20.

Geog. Dist.—Chiefly interior North America; breeding in Arctic regions, Yukon Valley, interior British America; wintering in South America to Uruguay and Peru; frequent in Europe.

County Records.—Cumberland; I have taken as many as four in a single fall and many of my friends have shot it, (Brown); one at Cape Elizabeth, September 13, 1887, (Smith); one in 1899 and one in 1901, (Lord).

Mr Brown writes me that he considers the species a regular fall migrant in August and September. Our only records are from the vicinity of Portland, though under the conditions of its occurrence there it seems likely that careful search should yield an occasional instance of its occurrence elsewhere along the coast.

I am unable to state much regarding the habits of this species. Chapman quotes Dr. Hatch as saying that in Minnesota the species prefers sandy barren prairies where they live upon grasshoppers, crickets, ants and their eggs, and insects generally, and also that along the sandy shores of small ponds they were feeding on small mollusks.

Genus ACTITIS Illiger.

263. *Actitis macularia* (Linn.). Spotted Sandpiper; Teeter-tail; Tip-up; Sand-lark; Peet-weet; Teeter "...".

Plumage of summer adults: brownish gray with greenish luster above with blackish streaks on head and neck and spots or bars of same on back; outer tail feathers with dark bars; below white with roundish spots of black. Plumage of winter adults: back browner, unbarred. Immature plumage: differs from other plumages in being strongly barred on the wing coverts with black and buffy and faintly with same on back; below white with grayish tinge on breast. Wing 4.00 to 4.50; culmen 1.00; tarsus 0.94.

Geog. Dist.—Breeding range temperate North America north to Hudson Bay; wintering through South America to Brazil; occasional in Europe.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; rather common summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; many breed among the islands of the coast as well as inland, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Lincoln; common, breeding on the islands, (Norton). Oxford; breeds commonly, (Nash). Penobscot; common local summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc;



NEST AND EGGS OF THE SPOTTED SANDPIPER.

Photograph by Ora Willis Knight.

common breeder, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common summer resident, (Adams).

It is about May first when some day the cheery cry "peet-weet, peet-weet" is heard as we pass along the river or pond and the utterer of this call flies with rapid wing stroke close to the water, leaving the shore and after describing a semi-circle returning to it at another point. If followed up this process is repeated until finally in disgust the bird takes a long flight to some other place where it will not be disturbed. They run along the shore pausing to bob their head and tail crying, "peep" or "peep-weet", or are often seen on some log or point projecting into the water likewise engaged in tipping and tetering.

About the middle of May the male may sometimes be seen strutting around its would be wife, fluffed up as much as it can and uttering a constant pleading, piping note. Then both are off out and over the water with a "weet". Though the nest is only a mere hollow lined with a little grass or occasionally a quite well constructed affair of grass and leaves, it takes considerable time to prepare this nest for the eggs.

Both birds indulge in much wordy argument over the proper place, though the site selected is always on the ground, either in the grass, at the foot of some small bush or shrub or in a similar spot not very far from the shore of some body of water as a general rule, though very exceptionally I have found a nest fully half a mile from water in a pasture.

When the birds have agreed upon the nesting site both male and female take turns in scuffling around and shaping the slight hollow and bringing a little dried grass to the nest all this "work" being subject to frequent interruptions, games of tag, follow the leader and other frolics. Under such conditions nest building often requires a week. Finally an egg is laid and then one usually follows each day until the nest contains four, all placed point inward.

Incubation begins as a rule when the first egg is laid, though even now frequent frolics interrupt the progress of events. In the course of fifteen days the first downy young bird appears, being very wet and bedraggled but drying into a fluffy ball in a short half hour. Within two days the other eggs hatch, by which time the first hatched young are usually able to run about.

The incubating parent either steals quietly away without discovery if the approach of an intruder is observed in time, or else flushes suddenly from under the feet with a seemingly badly crippled wing and flops off uttering piteous squeals "a-wee-wee-wee-eee-e-e-e-e" which soon brings the other parent when both utter angry or very excited "peet-weets" flying and running nervously about.

Nothing is more cunning than the newly fluffed downy young which are grayish above with a dark line from the bill down the back and another through each eye along the side of the head and are white below. The old birds are very excited when they are examined but as the danger ceases to menace and the intruder withdraws one parent or the other slips on to the nest and soothes the young with a murmured low pitched barely discernable "a-weet-a-weet-a-weet-a-weet-". Even when the young have left the nest and are scattered about the parent calls them together at times and hovers them, murmuring the same low lullaby.

The eggs are a creamy buff or whitish color, peppered, spotted and blotched with blackish brown and chocolate. The spots are most numerous at the larger end, being sometimes confluent or wreathed. Four eggs found at Orono, June 4, 1896, measure 1.17 x 0.95, 1.19 x 0.96, 1.20 x 0.94, 1.21 x 0.95. The nest was two and a half inches in diameter outside and one and a half inches inside being unusually well made of dry grass. Exceptionally, fresh eggs have been found near Orono as early as May 20 and as late as July first.

The birds eat small mollusks, worms, insects and similar things which they gather along the shores or in the shallow

water, both in fresh water and along the coast. Near Bangor they usually have departed by September first, but along the coast I have seen a few scattering "Peeps" up to the last of September.

Genus NUMENIUS Brisson.

✓ 264. *Numenius longirostris* Wils. Long-billed Curlew; Sickle-bill.

Plumage: streaked on head and neck and barred on back with blackish and buffy; wing coverts, inner portion of primaries, the secondaries and tail buffy rufous with blackish bars or spots; below ochraceous with streaks of blackish on breast and sometimes bars on the sides; axillars rufous, rarely barred. Wing 10.00 to 10.80; culmen 7.00; tarsus 3.25.

Geog. Dist.—North America, breeding in the interior north to Manitoba; winters from Florida and Texas south to Guatemala, Cuba and Jamaica; casual in New England.

County Records.—Cumberland; one at Scarboro, May 2, 1866, (Smith, F. & S. 20, p. 85). Knox; rare visitant in summer, (Norton). Sagadahoc; very rare in August, (Spinney). Washington; very rare, (Boardman).

As a casual visitor along the coast this species seems to occur in May and August. The breeding grounds are chiefly in the interior of British America, and it seems quite doubtful if there be any foundation for the oft repeated references to this species breeding in the South Atlantic States. The nest is the usual mere grass lined hollow on the ground and the four pyriform eggs are marked almost the same as those of the Willet, being olive or clay color with chocolate spots and blotches. One is said to measure 2.59 x 1.81, (Ridgw.). In the south they frequent muddy flats and shores, but in their breeding grounds are said to prefer grassy uplands. The food consists of worms, grasshoppers, beetles, sand-fleas, small crustaceans and small mollusks.

✓ 265. *Numenius hudsonicus* Lath. Hudsonian Curlew; American Whimbrel; Short-billed Curlew; Jack Curlew.

Plumage: above grayish brown with whitish spots on sides of feathers of back; crown with a narrow medial stripe of buffy and a broad dusky stripe each side; one or both webs of the primaries barred with buffy and dark;

rump and tail barred buffy and blackish; below whitish streaked with dark on neck, breast and sides, and barred with same on the axillar coverts. Wing 9.00 to 10.00; culmen 3.50; tarsus 2.25.

Geog. Dist.—North and South America and the West Indies; breeding in Arctic regions; winters in South America south to Patagonia.

County Records.—Cumberland; common, (Brock). Knox; migrant, (Rackliff). Piscataquis; a specimen was taken at Black Stream near Dover, October 12, 1898, (Ritchie). Sagadahoc; (Spinney, J. M. O. S. 1900, p. 39). Washington; very rare, (Boardman).

As a migrant in late May and again from late July until late September this species passes along our coasts in somewhat varying numbers, but usually rare, while inland it seems with us to be casual, though it seems to be generally distributed elsewhere in the interior United States during migration.

They are said to breed in the Anderson River Region, laying three to four pale olive eggs, spotted with dull brown and measuring 2.27 x 1.57 (Ridgw.). The food and habits of this species is said to be similar to those of the preceding species, but there seems to be much left for us to learn about them.

266. *Numenius borealis* (Forst.). Eskimo Curlew; Dough Bird; Fute.

Plumage: blackish above, the feathers margined with whitish; upper tail coverts barred with buff and blackish; tail brownish gray, barred with blackish; primaries not barred; below whitish with streaks on breast and bars on sides and axillars of black. Wing 8.00 to 8.50; culmen 2.38; tarsus 1.78.

Geog. Dist.—Eastern North America; breeding in Arctic regions; migrating south chiefly through interior United States; wintering through South America to Tierra Del Fuego.

County Records.—Androscoggin; (Pike). Cumberland; common, (Brock). Knox; migrant, (Rackliff). Piscataquis; rare visitor, (Homer). Sagadahoc; very few in August, (Spinney). Washington; very rare, (Boardman).

This species also is rare with us as a rule, being most general along the coast in late August and September. As a matter of fact we seem to know too little indeed about the exact status of any of our species of Curlew.

It seems likely that Mr. Mackay's account, (Auk 9, pp. 16 et seq.) is about as good as any available. He says:—"Most of their habits resemble closely those of the Golden

Plover. In migration they fly in much the same manner, with extended and broadside and triangular lines and clusters similar to those of Ducks and Geese at such times. They usually fly low after landing, sweeping slowly over the ground, apparently looking it over, generally standing motionless for quite a while after alighting, which, owing to their general color approximating so closely to the withered grass, renders it difficult at times to perceive them.

The only note I ever heard them make is a kind of squeak, very much like one of the cries of Wilson's Tern (*Sterna hirundo*), only finer in tone". Of the eggs Dr. Coues writes:—"This species breeds in great numbers in the Anderson River Region, usually making up its nest complement of four eggs by the third week in June. The nest is generally in an open plain, and is a mere depression of the ground, lined with a few dried leaves or grasses.

The eggs vary to the great extent usually witnessed among waders. The ground color is olive drab, tending to either green, gray or brown in different instances. The markings, always large, numerous and bold, are of different depths of dark chocolate, bistre and sepia-brown, with ordinary stone gray shell spots. They always tend to aggregate at the larger end, or at least, are more numerous on the major half of the eggs; though in a few instances the distribution is nearly uniform. Occasionally the butt end of the egg is almost completely occupied by confluence of very dark markings. Eggs vary from 1.90 x 1.40 to 2.12 x 1.33, averaging about 2.00 x 1.45 (Birds of the Northwest).

Family CHARADRIIDÆ. Plovers.

Key to the species of CHARADRIIDÆ.

- A. Toes four. Black-bellied Plover.
- B. Toes three.
 - 1. Wing over 5.50.

- §. Back spotted or streaked with black and white, rufous or yellow; wing over 6.80. American Golden Plover.
- §§. Back not spotted and streaked as indicated in preceding; wing under 6.80. Killdeer.
- 2. Wing under 5.50.
 - §. Bill over 0.50. Wilson's Plover. (Hypothetical List).
 - §§. Bill under 0.50.
 - a¹. Feet webbed at base; a black line from eye to bill. Semipalmated Plover.
 - a². Feet not webbed at base; no line from eye to bill.
 - b¹. Black patches on side of chest not connected. Piping Plover.
 - b². Black patches on side of chest connected, forming a continuous band across chest. Belted Piping Plover.

Genus SQUATAROLA Cuvier.

270. *Squatarola squatarola* (Linn.). Black-bellied Plover; Helvetian Plover; Beetle-head; Ox-eye; Whistling Field Plover; Bull-head Plover; Swiss Plover.

Plumage of summer adults: above black, more or less white borderings to the feathers; tail white, black barred; lower belly and under tail coverts white; sides of head, neck and other under parts black. Plumage of winter adults: above blackish with grayish spottings; below white with grayish streaks on breast and sides. Immature plumage: black above with streaks on head and neck and spots on the back of yellow; below white with streaks of grayish on breast and sides. *Toes always four*, the hind one rudimentary but plainly evident. Wing 7.30 to 7.80; culmen 1.14; tarsus 1.92.

Geog. Dist.—Cosmopolitan; breeding in Arctic regions; on the American side migrating south through the United States and wintering from Florida to the West Indies, Brazil and Columbia.

County Records.—Androscoggin; (Pike). Cumberland; common, (Brock). Hancock; occasionally common on the islands, (Knight); migrant, (Dorr). Knox; migrant, (Rackliff). Lincoln; seen on Western Egg Rock, June 24, 1895, (Norton). Penobscot; a specimen killed on Sunhaze Stream is in the University of Maine collections, (Knight). Sagadahoc; common fall and spring, (Spinney). Waldo; occasionally seen in considerable numbers in fall, (Knight). Washington; not very common, (Boardman); common in fall, a few in spring, (Clark).

During the fall this species occurs generally along the coast from the second week in August until October and is occasionally locally common at this season. In the spring it is much

rarer and more local in its occurrence from about May 12 to late in the month. Only stragglers seem to be met with inland.

Along the coast they may be seen in small flocks, often associated with the American Golden Plovers, feeding along the shores or on half tide ledges. As a flock approaches the feeding ground in a quite regular rank they utter frequent whistled calls, and after alighting they run quickly some distance and scatter out before beginning to feed. In fact all their motions are very quick, feeding, running quickly along, making another quick grab at food and pausing to look big-eyed for possible danger.

Their food consists of small mollusks, worms, small crustaceans, brittle stars, small holothuria and similar material left by the ebbing tide, varied by more or less insects and larvae picked up in the marshes at high tide. In Arctic regions they lay their eggs in slight hollows lined with a little grass.

The eggs are described as pyriform shaped, light buffy olive to deep olive buff in color, thickly and heavily spotted and marked, chiefly on the major portion with brownish black and black. The marks are often confluent on the larger end. An egg measures 2.00 x 1.41.

Genus CHARADRIUS Linnæus.

272. *Charadrius dominicus* Mull. American Golden Plover.

Plumage of summer adults: sides of head and under parts black; tail brownish gray with faint whitish bars; above black, the feathers spotted and margined with yellow. Plumage of winter adults and immature birds; above fuscous with yellowish white spots and bars; below whitish with dusky streaks and bars. Wing 6.90 to 7.60; culmen 0.90; tarsus 1.70.

Geog. Dist.—North and South America; breeding in Arctic North America; wintering from Florida through South America to Patagonia.

County Records.—Androscoggin; fairly common migrant, (Johnson). Cumberland; common, (Brock). Hancock; in fall among the islands, (Knight). Kennebec; (Dill). Knox; (Rackliff). Oxford; (Verrill's List Birds Norway). Penobscot; formerly common in fall, now very rare, (Knight). Piscataquis; migrant, (Homer). Sagadahoc; rare in fall, (Spinney). Somerset; two specimens shot by H. H. Johnson, September 10, 1894, (Morrell). Waldo; fall migrant among the islands, (Knight). Washington; not very common, (Boardman). York; (Butters).

As a fall migrant we may expect this species quite generally along the coast from the middle of August until October, while inland at this season it is apt to occur locally. It does not seem to be common anywhere now though formerly the species occurred locally quite abundantly some seasons. There seem to be no available records to indicate its occurrence in spring.

Though usually found in flocks of its own kind it is not unusual to find mixed flocks of both the Black-bellied Plover and this species, especially during the feeding time, when they occur along the muddy shores, on the half tide ledges and in similar localities. I have however found this species frequenting fields and similar places inland where the Black-bellied Plover would not seemingly think of feeding.

The species in question is very noisy when on the wing and keeps a constant whistled "koodel, koodel, koodel" when approaching a spot on which they plan to alight. When feeding their quick actions are the same as those of the Black-bellied species and they eat the same kinds of material. The nest is similar to that of the other species in being unworthy of the name. The four eggs are buffy drab to whitish, spotted and blotched with brown and black. An egg measures 1.87 x 1.25.

Genus OXYECHUS Reichenbach.

273. *Oxyechus vociferus* (Linn.). Killdeer.

Plumage of adults: crown and back grayish brown; rump and upper tail coverts rufous; white spot behind each eye; the forehead, throat, ring around neck, breast band, lower breast and belly white; front of crown, lores, neck ring and breast band black; middle tail feathers grayish, outer ones rufous and white, all white and black tipped. Immature plumage: differs in having rufous margins to some of the back feathers above, otherwise similar. Wing 6.25 to 6.70; culmen 0.78; tarsus 1.40.

Geog. Dist.—Temperate North America north to Newfoundland and Manitoba, breeding throughout its range; winters from Virginia and the lower Mississippi to the West Indies and northern South America.

County Records—Androscoggin; (Pike). Cumberland; rare, (Brock). Franklin; rare migrant, (Sweet). Knox; rare migrant, (Rackliff).

Penobscot; used to occur here forty years ago, (1857) (Hardy). Piscataquis; rare, (Homer). Sagadahoc; very scarce in fall, (Spinney). Washington; accidental, (Boardman).

Though breeding north, west and south of us this species does not now breed in Maine, if indeed it ever did. It seems to occur very rarely in September and October, and of late years along the coast only. In the west I have often watched a flock of these birds running along the shore, scattered out and feeding on such insects, worms and similar material as they found at or near the water's edge. Suddenly one would take fright and with a "kill-deek" away they went.

When much stirred up, especially in the breeding season, they will hang around an intruder for hours keeping up a "kill-deer kill- dee" either from overhead or when tired of being on the wing alighting to keep up the same cry. When the danger which threatened the young was unusually imminent they often utter a passionate "reak-reak" as a variation of their "kill-deer" which latter call is uttered in a wonderfully great variation of pitches, intonations etc. so that it seems to express very different degrees of emotion and excitement.

They nest in the sand or on the ground in bottom lands along some river or near some other body of water or in upland fields and pastures. Four eggs from a depression in the ground in a grassy field, Clark County, Virginia, June 9, 1890, measure 1.55 x 1.06, 1.59 x 1.06, 1.57 x 1.09, 1.54 x 1.08. The ground color of eggs laid by various birds varies from drab to pale clay color or light buff, heavily spotted and blotched with umber, chocolate and blackish brown, the spots often being confluent and usually most numerous at the larger end.

The downy young are cunning little things, being fluffy balls of down, grayish brown above with white collar and black areas surrounding the grayish brown; below they are white except for a black collar and band on chest, this being only a general description. Let those who wish a better one attempt to make notes after they have caught a young bird and are trying

to study it in the face of the frantic cries, expostulations, swoopings and crippled struggles of the old bird at your very feet until finally you are forced in sheer desperation to liberate the young bird and seek a quieter spot before the notes are half done.

Genus *ÆGIALITIS* Boie.

274. *Ægialitis semipalmata* Bonap. Semipalmated Plover; Ring-neck.

Plumage of summer adults: lores, fore part of crown, broad chest band (usually encircling the back also) and sides of head black; throat, ring around neck, breast and belly white; back of head, the back and inner tail feathers brownish gray, grading to white on outer tail feathers. Plumage of winter adults: differs chiefly in having the black parts described above replaced with brownish gray. Immature plumage: like winter plumage except that feathers of back are margined with light buff at ends. Toes always webbed at base. Wing 4.50 to 5.00; culmen 0.50; tarsus 0.95.

Geog. Dist.—America; breeding from Labrador to Arctic regions; in migration passing southward through the states; winters from the Gulf States to Brazil, Peru and the Galapagos Islands.

County Records—Androscoggin; fairly common migrant, (Johnson). Cumberland; common, (Brock). Hancock; common in spring and fall migrations, I saw a flock of four at Saddleback Ledge, June 22, 1896, (Knight). Kennebec; (Dill). Knox; summer, (Rackliff). Oxford; occurs at Lake Umbagog, (Brewster, B. N. O. C. 5, p. 60). Penobscot; occasional in fall on the edging beds at Stillwater, (Knight). Sagadahoc; common in August, (Spinney). Somerset; one shot August 10, 1894, (Morrell). Waldo; common in migrations, (Knight). Washington; common in summer, (Boardman).

As a migrant the species is common and general along the coast, the first arrivals appearing in late July and many remaining until early September, while in spring it is less common in May and occasionally seen until even June 22. Though seen practically every month from May to September the species does not breed with us, those seen in late June being probably belated migrants, and those arriving in late July being equally prompt returning birds.

Inland the species occurs rather local and scattering in August. They like to frequent sandy shores, mud flats and

similar localities where they can obtain the worms, insects, mollusks and small crustaceans they like so well. In such places they may be found in small flocks of six to twelve running along until they finally take flight to close into a compact little flock and pass along with a few short notes which are most characteristic and equally as hard to reproduce.

They breed both along the ocean and inland about the ponds and rivers of the Arctic regions. Three or four eggs are laid and these are greenish buff or buffy white in color with heavy spots and blotches of chocolate, brown and blackish. Three eggs from Fessiujak, Labrador, were taken June 15, 1896. The nest was said to be on the ground in a bog twenty miles back from the open sea, and was a mere hollow in the earth with a few leaves. These eggs, now before me, measure 1.34×0.93 , 1.34×0.95 , 1.31×0.98 . Dr. Dwight records the species as breeding on Sable Island, Nova Scotia and describes the song of the male as consisting of a harsh resonant "tschup" uttered while sweeping about on the wing near the ground, and repeated many times in succession.

277. ✓ *Ægialitis meloda* (Ord). Piping Plover.

Plumage of summer adults: front of crown and a band on either side of breast, which is joined into a continuous bar across the breast in the most mature birds, black; forehead, ring around neck, outer tail feathers and under parts white; upper parts and inner tail feathers ashy. Plumage of winter adults: similar with the darker colorations brownish gray instead of black as in summer. Immature plumage: differs from winter plumage in that the feathers of the back are bordered with very pale buff. Wing 4.50 to 4.91; culmen 0.48; tarsus 0.91.

Geog. Dist.—Eastern North America, breeding from Virginia to Newfoundland; wintering from Florida and the West Indies southward.

County Records.—Cumberland; rare summer resident, (Brown, C. B. P. p. 25); received one in 1902 taken near Portland, (Lord). Sagadahoc; very scarce in August, (Spinney). Washington; rare, said to breed on the islands, (Boardman).

Though formerly occurring as a breeding bird along the western coast of Maine, there seems reason to believe that the

species now occurs only as a rare migrant. In places where it is common it occurs in small bands and in fact in general habits acts like the Semipalmated Plover.

The call note however is different sounding much like the syllables "keep, keep, keep-low". They feed on insects, crustaceans, worms and similar marine life which they glean along the shores like the Semipalmated species does. Their three or four eggs are laid in a mere hollow in the sand and are pale buff or creamy white, spotted with chocolate, black and purplish gray. The average measurement is about 1.29 x 0.95 (Davie).

277a. *Ægialitis meloda circumcincta* Ridgw. Belted Piping Plover.

Plumage: the alleged difference between this and the preceding is that the band across the chest is continuous, while in the preceding it is said to be interrupted. The difference so alleged is however in the opinion of the writer as well as others unworthy of the creation of a variety based upon this alleged difference which is really only an indication of the most fully matured phase of plumage of the Piping Plover.

As this work is based upon the A. O. U. Check-list we must accept things which do not accord with our best judgment on the subject and the so-called subspecies is given here with the distinct understanding that the author does not accept it.

ALLEGED Geog. Dist.—Mississippi Valley, breeding from northern Illinois north to Lake Winnipeg; more or less frequent eastward to the Atlantic coast. (A. O. U. Check-list); breeding on Sable Island (Dwight).

County Records.—Cumberland; two specimens have been taken at Scarborough, (Allen, Auk, 3, p. 82).

The habits of this alleged subspecies are not different from those of the Piping Plover, neither does its range seem to strictly accord with that which it is ordered to restrict itself to according to the A. O. U. Check-list. It is high time that this distinction was relegated to the past to occupy a shelf along with the discarded American Herring Gull and other similar relics. There seems every reason for believing that birds with the continuous band across the chest are only adults which have reached the full ripeness of maturity.

Family APHRIZIDÆ. Surf Birds and Turnstones.

Subfamily ARENARIINÆ. Turnstones.

Genus ARENARIA Brisson.

283.1. *Arenaria morinella* Linn. Ruddy Turnstone; Brant Bird; Bead Bird; Horse-foot Snipe; Calico Back.

Plumage of adult male: general color above chestnut, variegated with black and white; scapulars chestnut, the outer feathers broadly tipped with black and slightly with white; longer scapular feathers blackish olive, irregularly tipped with chestnut; tail white at base, a black band near its end and white tipped; throat and breast black and white; belly white. Plumage of adult female: a larger duller colored bird of similar pattern; chestnut of mantle with dark streakings; pileum less black and with wider rufous edgings; tail band duller than in male; median wing coverts mixed grayish and pale chestnut with dark central streaks; tail band less strongly black; long tertials less strongly tipped and margined with chestnut. Immature plumage: feathers of the upper parts with buffy margins; chest mottled with dusky. Wing 9.00 to 10.00; culmen 0.84; tarsus 0.98.

Geog. Dist.—In Arctic America from the Mackenzie River eastward in breeding season; migrating southward chiefly along the coast but also through the interior and wintering south to Patagonia and the Falkland Islands.

County Records.—Cumberland; common, (Brock). Hancock; common locally among the islands and along the coast from late July to September, (Knight). Knox; summer, (Rackliff). Penobscot; Fred Colby shot one at Hermon Pond some years ago, (Knight). Sagadahoc; common in August, (Spinney). Waldo; local along the coast in August and September, (Knight). Washington; fall, not rare, (Boardman).

Mr. Brown has recorded the fact that these birds occur near Portland from about May 22 to May 27 in the spring and from mid July to September in fall, and it may be stated that they are more or less general, and often locally common along the entire coast at the same dates, in fall, much rarer in spring. Only a few stragglers occur inland.

These birds frequent half tide rocks and gravelly shores, feeding on various small mollusks, crustaceans and worms which they seek by turning over small pebbles as well as taking what are not so concealed. They are generally quite tame and occur in flocks of ten to twelve individuals, or sometimes

singly. I am inclined to believe that they utter no characteristic cry as all I have ever seen or studied about Penobscot Bay seemed very silent. The four eggs are laid in a mere hollow in the ground in high northern latitudes such as the Hudson Bay region. The eggs are greenish ash or clay color, dotted, blotched and streaked with grayish brown, yellowish and umber brown.

Family HÆMATOPODIDÆ. Oyster-catchers.

Genus HÆMATOPUS Linnæus.

286. *Hæmatopus palliatus* Temm. American Oyster-catcher; Brownish-backed Oyster-catcher.

Plumage of adults: head, neck and upper breast glossy black; lower breast, belly, base of tail, upper tail coverts and secondaries white; end of tail and primaries fuscous; back and wing coverts olive brown. Immature plumage: differs chiefly in the darker colors being more brownish rather than black; the feathers above margined more or less with buffy. Wing 10.00 to 11.00; culmen 3.30; tarsus 2.30.

Geog. Dist.—Coast of America from New Jersey and Lower California to Patagonia; occasional on the Atlantic coast north to Grand Menan, and formerly even to Labrador.

County Records.—Cumberland; "It seems scarcer between Long Island and Portland, Maine, where you again see it, and whence it occurs all the way to Labrador." (Audubon, Orn. Biog. 3, p. 181 et seq.)

We have only Audubon's record to rely upon in crediting the species to the State as all other lists have seemingly relied upon Smith's record (Forest and Stream, 20, p. 45) which I am informed by Mr. Boardman was based upon a specimen taken upon CANADIAN SOIL. However in view of Audubon's very definite statement there seems no doubt that in his day the species was found near Portland.

They nest more or less locally in small colonies along the coast of the South Atlantic and Gulf States. Three or sometimes only two creamy or buffy white eggs, somewhat evenly spotted and blotched with brown and chocolate and with suffused blotches of lilac, are laid. The nest is a mere hollow in the sand.

Two nearly incubated eggs in my collection were taken by Mr. Arther T. Wayne at Long Island, South Carolina, May 13, 1896. The eggs were laid in a hollow scooped in the sand by the birds within ten yards of high water mark on a beach, and the collector states that this was the earliest date of laying he had ever known. These eggs measure 2.18 x 1.56, 2.33 x 1.56. The birds feed on mollusks such as clams, oysters and other bivalves, being said to open the shells of these with their strong bills. They obtain their food on the beds and bars which are exposed at low tide.

Order GALLINÆ. Gallinaceous Birds.

Suborder PHASIANI. Pheasants, Grouse, Partridges, Quail, etc.

Key to the species of PHASIANI.

- A. Wing over 18.00 Wild Turkey.
- B. Wing very much under 18.00.
 - 1. Wing under 5.50. Bob-white.
 - 2. Wing over 5.50.
 - §. Toes entirely feathered. Willow Ptarmigan.
 - §§. Toes not feathered.
 - ?. Tarsi feathered to base of toes. Canadian Spruce Grouse.
 - ?. Tarsi not feathered to base of toes; only about the upper third to half feathered. Canada Ruffed Grouse.

Family TETRAONIDÆ. Grouse, Partridges, etc.

Subfamily PERDICINÆ, Partridges.

Genus COLINUS Lesson.

289. *Colinus virginianus* (Linn.). Bob-white; American Quail; Virginia Partridge.

Plumage of adult male: above reddish brown; interscapulars with more or less broken bars; inner vein of tertials margined with buff; rump grayish brown with blackish mottlings and streaks; front of head, band from bill under eye, patch on upper breast black; line from bill over eye, throat, lower

breast and belly white, the two latter barred with black; sides chestnut with black and white margins to feathers; tail ashy, mottled with buffy. Plumage of adult female: forehead, throat, lores and line over the eye pale ochraceous; black of upper breast wanting or much restricted. Immature plumage: top of head dull grayish; rest of head dirty whitish; breast brownish gray streaked with whitish; belly white; back rusty brown with whitish streaks and dark spots. Wing 4.25 to 4.75; culmen 0.60; tarsus 1.35.

Geog. Dist.—Eastern United States and southern Ontario, from southern Maine to the South Atlantic and Gulf States; west to central South Dakota, Nebraska, Kansas, Oklahoma and eastern Texas; of late years gradually extending its range westward along the railroads; introduced in various places in Colorado, New Mexico, Utah, Idaho, California, Oregon and Washington; resident throughout its range.

County Records.—Androscoggin; rare, (Johnson). Cumberland; occasional, (Brock); one in fall of 1901, (Lord); a number seen on Cliff Island, Casco Bay, in spring of 1899, these being introduced by Mr. McKenney of Philadelphia, (Swain, J. M. O. S. 1904, p. 64); one seen repeatedly in pasture in rear of my house in July, 1897, (Mead). Franklin; very rare, not seen since 1890, only two seen then, (Swain). Oxford; one was seen several times near East Hebron in the summer of 1896, being observed both on the Oxford and Androscoggin side of the line, (Johnson). Penobscot; some birds were let loose near Hermon in 1894 by George Abbott and these have been reported as breeding for several seasons, but finally when not tended through the winter they all perished, (Knight). Waldo; Dr. Soule saw a male in Unity in September, 1899, (J. M. O. S. 1902, p. 18). York; in June and July, 1897, one stopped back of the house, and in October one of the boys came to the house and reported that he had flushed a covey in a neighboring field a short time before, (H. P. Libby, Eliot); a number were reported as found dead near Kennebunk in the winter of 1904, (J. M. O. S. 1904, p. 63).

As a bird of Maine the Bob-white is practically confined to the southwestern part of the State, and it seems quite likely that disregarding introduced individuals and their descendants the species is properly native only in the very extreme southwestern corner of the State.

In spring and summer the male mounts to the top of some convenient fence, stone wall, bush or rarely tree and repeatedly calls "bob-white, bob-white" in a clear whistled tone. This call is often varied by certain individuals who say "bob-bob-white" or more rarely "bob-bob-bob-white" while sometimes the call is curtailed to a mere "white" or "whit".

The birds prefer to frequent fields, pastures, thickets and similar locations where there is more or less open territory, as well as shelter among the bushes and briers immediately at hand. In the breeding season only a family is found in a given small territory, later on if successful in rearing young the whole family and young remaining together through the winter but not showing a tendency to any extent to unite with other family groups. At the beginning of the mating season the family scatters.

The nest is placed on the ground at the foot of a small bush in a pasture or near a fence or shrub in a field or in a similar situation. The number of eggs laid seems extremely variable, some nests containing seven or eight incubated eggs while others have been found containing thirty-seven eggs.

As nests which have been watched by certain parties have been found to have eggs added at the rate of two or even three in a day, there seems to be no doubt in some cases that as many as three hens may lay in the same nest, but this is likely exceptional. It seems very probable that the normal product of one female is from eight to fifteen eggs, and when more are found, showing variation in size or shape it seems quite conclusive that they are the product of at least two females.

A nest containing seventeen fresh eggs is now before me, these being taken at Wayland, Missouri, May 16, 1897. The nest was composed of grass with a lining of grass and a few leaves, placed near a fence in a meadow and well concealed. The eggs are pure white, very blunt at one end and pointed at the other and measure 1.14 x 0.96, 1.20 x 0.94, 1.21 x 0.92, 1.15 x 0.92, 1.22 x 0.96, 1.18 x 0.97, 1.18 x 0.95, 1.15 x 0.95, 1.18 x 0.96, 1.15 x 0.96, 1.14 x 0.94, 1.15 x 0.96, 1.12 x 0.96, 1.15 x 0.96, 1.14 x 0.95, 1.15 x 0.94, 1.13 x 0.96. This set in question seems to have been the product of two hens.

These birds roost on the ground in a compact bunch, heads outward and when flushed scatter in all directions, to utter low "whit, whit" varied by a twittering call after the danger has

passed until finally they have assembled again. They do not fly until nearly under the foot, and when the hen is incubating she sits even more closely. After the first brood is hatched the male is said to take charge of them while a second installment is being hatched, and there have been recorded instances where the male bird assumed the work of incubation when its mate was accidentally killed.

The young grow rapidly after hatching, and are fluffy balls of down, being chestnut above and grayish buff below, with a pale patch on the throat, and a darkish line beneath the eye. The food of the species is quite variable, during the summer many worms, beetles and similar insects and their larvae being eaten, while wheat, rye, oats, barley and the seeds of various weeds such as *Polygonums*, *Helianthus*, *Setaria*, *Desmodium*, and similar weeds and berries such as the fruit of *Gaultheria*, *Mitchella*, *Vaccinium*, *Viburnum*, *Cornus*, *Rubus* and in fact a great variety of similar material is eaten in season.

Much if not all of the grain eaten is such as is left behind in harvesting, while the large number of weed seeds eaten in fall and winter renders this species decidedly beneficial.

Subfamily TETRAONINÆ. Grouse.

Genus CANACHITES Stejneger.

298c. *Canachites canadensis canadensis* (Linn.). Canadian Spruce Grouse; Wood Partridge; Black Grouse; Spotted Grouse; Spruce Partridge.

Plumage of adult male: a bright red bare spot above each eye; upper parts barred black, ashy gray and grayish brown; tail black with a rufous tip; throat and breast black with an intervening area of the same color as the back and another of black and white; sides mottled black and gray brown; otherwise below black with white tipped feathers. Plumage of adult female and immature: above black and rufous with ashy gray tips to the feathers; throat and upper breast barred and sides mottled with black and rufous; other under parts black with white tips to feathers and more or less rufous suffusions; tail black with rufous tips and mottled with same. Wing 6.50 to 7.50; bill from nostril 0.44; tarsus 4.60.

Geog. Dist.—Northern Minnesota, New York, New England, New Brunswick and Canadian zone of northeast Canada.

County Records.—Aroostook; occurs quite locally in the densely wooded sections of the county, resident, (Knight). Franklin; rare resident, (Richards). Hancock; rare resident, (Knight). Knox; rare, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; very rare and local, (Knight). Piscataquis; resident, not common, (Homer). Somerset; resident in northern part of county, (Morrell). Waldo; taken formerly, (Knight). Washington; common resident, (Boardman); on rapid decrease in this county, (Clark).

In the more densely wooded and less inhabited portions of northern and eastern Maine this species still occurs as a rare resident. It is most often found by single individuals or at most not over two or three together except at such times as the parent bird is accompanied by its young.

Mr. Hardy is quoted by Major Bendire as stating that the male bird "drums" by flying up into a tree, starting off and drumming on the way to the ground. Others mention another way of drumming in which the bird starts up a tree inclined from the perpendicular, causing the drumming sound by its rapidly beating wings, and when the top is reached descends by gliding through the air to the ground to repeat the performance. (Smith F. & S. Feb. 8, 1883, p. 26).

The male bird struts during the mating season, holding the tail erect, wings outspread and drooping, feathers raised, the bare spots over the eyes inflated until they nearly meet over the head, trying meanwhile to walk about, then flying up to a perch and back again, in fact doing everything possible to attract attention according to a description of birds in captivity in *Forest and Stream* by W. L. Bishop.

The birds frequent rather dense evergreen woods, and are very hard to discover on account of their very tameness. They rarely fly up until practically stepped on at other times than in the nesting season, and in the nesting season a broody hen will hardly leave the nest for anything. Birds I have seen perched in trees, where they are easier to discover than when on the ground, remained until having completed my inspection I either secured them by shooting or with a club or walked

away and left them there. Those seen by me at Sunkhaze, a few miles from Oldtown though in a region frequently visited by the hunters, were so tame as to appear stupid.

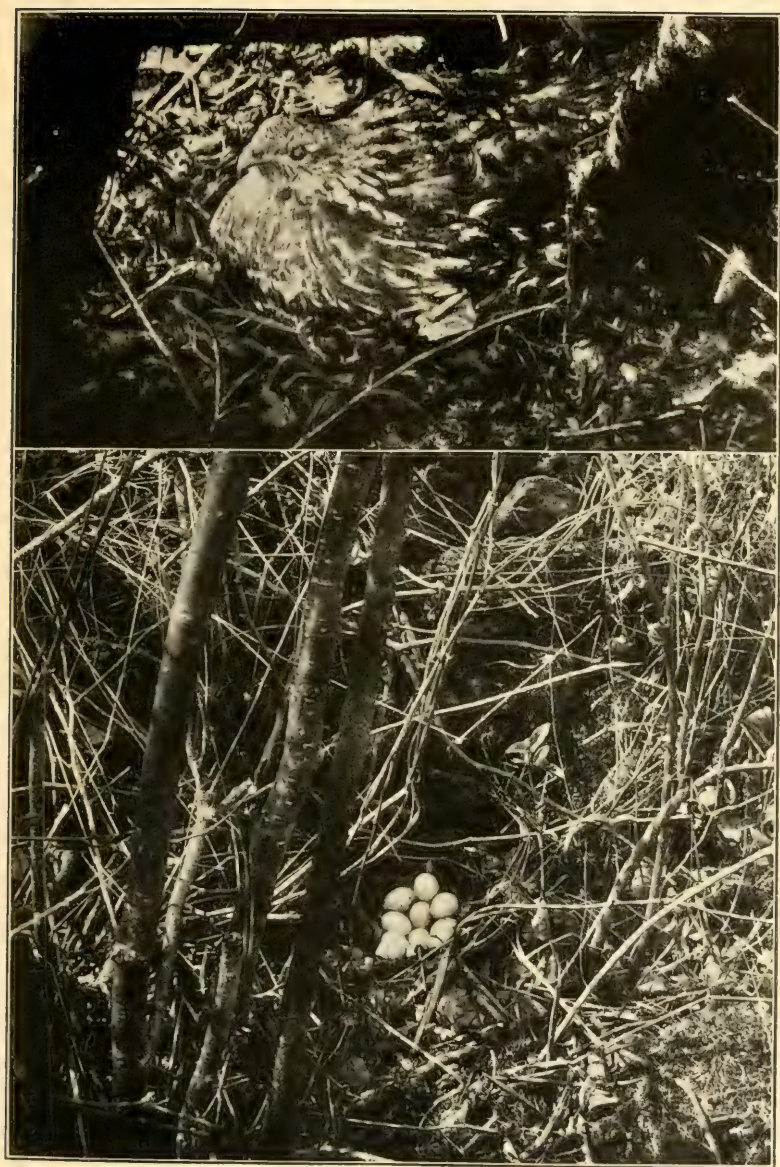
They feed on the buds of fir, spruce, hackmatack, birch, poplar and other trees, and like blackberries, blueberries and the fruit of *Gaultheria*, *Mitchella* and similar wild fruits very much indeed. They also eat a few beetles and other insects during the summer.

The nest is always on the ground usually at the foot of a tree or under a bush in rather dense evergreen woods, and is a mere aggregation of leaves and mosses shaped out by the bird. The eggs are of a buffy or reddish brown color, more or less spotted and blotched with reddish brown and umber, the spots being well distributed over the surface, and the eggs are indeed very handsome. Eight to fourteen are usually laid and they measure about 1.68 x 1.18.

Genus BONASA Stephens.

300a. *Bonasa umbellus togata* (Linn.). Canadian Ruffed Grouse; Partridge; Pheasant.

Plumage of adult male: prevailing color of the upper parts grayish, variegated with black, rufous, ochraceous, buffy and whitish; sides of neck each with a tuft of broad glossy black or sometimes reddish bronze colored feathers; tail of varying mixtures of gray and rufous, or occasionally with either shade predominating to the practical exclusion of the other and barred and mottled with black; a broad brownish or blackish subterminal bar at end of tail, the feathers tipped with grayish; throat and breast ochraceous buff, the feathers of throat more or less narrowly edged with blackish and those of breast with still more well defined edgings; a more or less well defined blackish band on breast; rest of under parts white, strongly barred with black, grayish brown or hair brown of varying shades of intensity in different individuals; bars always stronger on or towards sides than on breast and belly. Plumage of adult female: neck tufts smaller than in male; sub-terminal tail band generally averaging narrower and somewhat interrupted. Immature plumage: very similar but neck tufts poorly developed or only slightly indicated, developing more and more according to age; feathers of chest and breast *spotted* with blackish, producing a striped appearance to some degree. Downy young: a black stripe from rear of eye across ear



CANADIAN RUFFED GROUSE ON NEST.
NEST AND EGGS OF THE CANADIAN RUFFED GROUSE.

Photograph by Ora Willis Knight.

coverts; above chestnut buff, deeper on occiput; below pale buff. Wing 6.90 to 7.70; bill from nostril 0.55.

Geog. Dist.—From Massachusetts, northern New York, New Hampshire Vermont, Maine, and the British Provinces west to Oregon, Washington, and British Columbia, north to James Bay.

County Dist.—Androscoggin; common resident, (Call). Aroostook; common resident locally, (Knight). Cumberland; common resident, (Mead). Franklin; common resident, (Lee & McLain). Hancock; common resident both inland and on many of the wooded islands, (Knight). Kennebec; common resident, (Powers). Knox; resident, (Rackliff). Oxford; breeds, common, (Nash). Penobscot; common resident, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; nests, (Spinney). Somerset; common, (Morrell). Waldo; common resident, (Knight). Washington; common, (Boardman). York; would be common if sportsmen would let them alone, (Adams).

The Partridge is still a common resident species throughout the State and can be found in almost any considerable patch of rather open mixed or hardwood growth. In early spring the drumming call of the male bird always quickens my pulse and the "t—h—u—m—p, t—h—u—m—p, t—h—u—m—p, t—h—u—m—p, thump, thump, thump—r—r—r—r—r—r—" seems like a call of Nature to hasten to the woods to seek the early flowers.

Who of my readers have ever seen a "drummer?" Not one in twenty of those who have heard one I'll warrant. The male birds usually each have its favorite drumming log, one often used by the family if not indeed by the same individual bird for years in some cases.

Never shall I forget the time when in early spring while gathering the fragrant Arbutus, a fallen log on which my gaze chanced to fall suddenly betook life on itself for from its more remote side there lightly hopped onto it a fine large cock Partridge. He preened himself lightly for a short time and then suddenly spread his tail into a fan, raised the feathers of his crown into a top knot, spread his wings partly out and slightly drooping, his ruffs seemed to stand out fully spread and somewhat raised from the body, and in the full vigor of his sex he proudly strutted up and down the log, uttering

a "putter, putter-p-r-r-r-" two or three times. Stopping he quickly raised his wings from his body until they seemed almost if not quite to touch over his back, repeatedly, quicker and quicker they rose and fell while the well known "t—h—u—m—p, t—h—u—m—p, t—h—u—m—p, t—h—u—m—p, thump, thump, thump-r-r-r-r-r-r-r- rolled out on the air.

How did he do it? Don't ask me, for I was too frightened for fear he would see me before completing his performance to move a muscle or hardly to look at him. The wings most certainly hit against his sides and might have thus produced the sound. So many sportsmen have argued the matter pro and con that it is hard to say which is right. However my Grouse stopped his drumming to begin to strut, as quickly saw me and then with a "quiter-quit" he slipped down and ran a few steps, rose and flew away.

Do different individual birds vary the manner in which they drum? It seems quite likely that they do for I have noticed quite an appreciable difference in the timing, number of thumps and other sounds proceeding from different localities, while the performance of an individual in the same locality from day to day seemed quite uniform.

Different observers have told of the fierce fights which sometimes rage between two males for possession of a given drumming log but I have never chanced to see such a novel sight though once in spring the numerous scattered feathers from what was certainly two different birds in the vicinity of a drumming log indicated that some kind of a tragedy had taken place.

The female in late April or early May selects a nesting site always on the ground, under a brush pile, at the foot of a tree, close to a large rock or in some similar situation in the rather open woods or thickets. The nest is somewhat hollowed out and rather sparsely constructed of dry leaves, pine needles, dry grass, occasionally a very few feathers, and similar material.

Only one brood is reared, but if robbed of her first laying another set will be laid in a new nest.

Six to fourteen eggs are laid varying in color from pale ochraceous buff or cream color to pale buff. Many eggs are absolutely unspotted but a fair proportion are spotted with small dots of reddish brown and drab. A typical nest found, May 14, 1904, was loosely hollowed in dead leaves at the foot of a ledge in a rather open thicket, and this like practically all the nests I have seen was so placed that the bird could not be readily approached from the rear, and every time I visited the nest she was facing the only point from which danger could easily approach her. This nest was six and a half inches across the outside and the cavity within was two and a half inches deep. The twelve eggs in this nest measured 1.52 x 1.16, 1.46 x 1.13, 1.48 x 1.18, 1.44 x 1.13, 1.52 x 1.16, 1.54 x 1.19, 1.39 x 1.13, 1.52 x 1.16, 1.41 x 1.12, 1.59 x 1.19, 1.42 x 1.12, 1.51 x 1.16.

As incubation advances the female sits closer and often does not leave the nest until almost stepped upon. Then she goes off with a few hops to play cripple and whine like a whipped puppy in hopes of distracting attention from the nest, and this whipped puppy call is very characteristically uttered when the female is with young, at which times I have had them fly at my feet in a vain endeavor to attract my attention while the young quickly hid amidst the leaves. When the eggs are fresh the female is generally up and away with a "whirr" not to return for some time.

The incubation period I have not been able to work out very definitely but am very sure it is under twenty one days, that is to say all the eggs are hatched in slightly less than twenty one days from the time when the last egg was laid. The bird sits more or less from the time when the first egg is laid but incubation does not seem to be commenced in dead earnest until the final egg has been laid.

After the first egg has hatched all the others have usually hatched within forty-eight hours. The downy young are soon able to run about and leave the nest very soon after all have hatched. The old bird broods them with "quits" and "chirrs" in much the same manner as a domestic hen. When not much larger than a Robin the young are able to fly.

The young as well as the adults have a varied diet. Beetles, worms, bunchberries, blueberries, blackberries, raspberries, checkerberries, partridge berries, thorn plums, chokecherries, oxalis leaves, clover leaves, grass blades, touch-me-not leaves and seed, beechnuts, and a far greater variety of similar material are eaten in summer and fall. In the winter they "bud" seeming to prefer the yellow and white birches, and the poplar, but also eating spruce, fir, pine, maple and in fact many other buds.

In the winter the comb like fringes on their toes are well developed, making their tracks have a peculiar appearance when clearly impressed in moist snow. These combs serve in the same manner as snowshoes. At this season the birds burrow more or less into the dry snow to seek shelter, and sometimes if a storm and a thaw sets in while they are under the snow, followed by a sharp freeze, the crust so formed prevents the birds from escaping and they perish. That the Partridge learns by experience seems very evident.

In my boyhood days when there were more birds and fewer hunters it was a very common experience for me to start up a flock of ten or a dozen birds, old with young, and all would fly up into convenient trees near at hand. Under such conditions during the hunting season I could often shoot several before they took alarm. Now it is rare to scare up more than one or at most two or three Partridge in a bunch, and these usually go up without any preliminary warnings or quits, generally on the farther side of some thick trees, and fly straight away without any chance to see them clearly. They have learned by experience how to act.

While occasionally stray birds may be heard drumming at almost any time of the year, even in mid winter, the sound is not so vigorously or often repeated as in spring time at which season it is doubtless used both as a challenge to other males in the vicinity and to attract the female. All our Maine birds are referable to the Candian Ruffed Grouse, a subspecies not generally recognized at the time when the earlier writers referred our birds to the typical form. The true Ruffed Grouse has not yet been found in Maine and seems indeed too vaguely apprehended, as the nearest place where typical birds of the Ruffed Grouse are known to occur is on Cape Cod.

Genus LAGOPUS Brisson.

301. *Lagopus lagopus* (Linn.). Willow Ptarmigan.

Plumage of male in summer: above black, thickly barred and mottled with rufous and whitish; head, neck and lower parts cinnamon rufous, barred with black on sides, flanks and under tail coverts; tail fuscous, tipped with white; belly white. Plumage of adult female in summer: differs chiefly in having broader bars above and below. Plumage of winter adults: pure white except outer tail feathers which are fuscous, tipped with white. Wing 7.26 to 7.75; bill from nostril 0.45.

Geog. Dist.—Arctic regions, mainly north of 55°, south to Sitka and the British Provinces; straggler to Kenduskeag, Maine, and Essex County, Mass.

County Records.—Penobscot; one was shot at Kenduskeag, April 23, 1892, (Merrill, Auk. 9, p. 300).

This species is purely accidental in Maine, and it is indeed very hard to explain what brought a bird of the north to this State. In their northern homes they are said to lead a somewhat wandering existence at most seasons of the year, sometimes wintering in large flocks in the thickets of dwarf shrubs along the rivers and lakes.

Their food consists of various buds in winter, and in summer they eat insects, grass, tender shoots and leaves and various fruits and berries in season. Mr. Nelson is quoted by Major Bendire as stating that in Alaska near the mouth of the Yukon the habits of these birds are about as follows. In April or early May the male birds begin to utter their hoarse love notes.

The natives take advantage of this by fixing a dark bunch of moss on the snow to represent the head of a Ptarmigan, roughly modelling the body out of snow, and concealing themselves near by utter a nasal "yak-yak-yak-yak" in imitation of the cry which soon attracts a bird to the vicinity.

The males are very pugnacious, pursuing one another, alighting on knolls, and thence arising five to ten yards in the air to descend with the wings curved downward. While ascending their note is given as "ku-ku-ku-ku-ku" which in descending is changed to a hard rolling "kr-r-r-r-r" ending as the bird reaches the ground. Sometimes they fight fiercely until the ground is strewn with feathers.

Early in June or rarely in late May the first eggs are laid, and by June 20 to 25 the first young are hatched. The young are on the wing in July and full fledged by early August. The nest is placed on some slight knoll or dry place on the open grass or tundra. The number of eggs ranges from seven to thirteen. Major Bendire describes the eggs as being cream color to a pronounced reddish buff, the ground color being evident in some and in others almost obscured by the heavy confluent blotches and markings of dark reddish and clove brown. This color can readily be washed from a freshly laid egg, leaving it a pure creamy white and of course rendering it abnormal and destitute of beauty. Ptarmigan's eggs are among the most handsome of birds eggs. Major Bendire gives the average measurements of two hundred and fifty eggs as 43 x 31 millimeters, or about 1.69 x 1.22.

Family PHASIANIDÆ. Pheasants, etc.

Subfamily MELEAGRINÆ. Turkeys.

Genus MELEAGRIS Linnæus.

310. *Meleagris gallopavo silvestris* (Vieill.). Wild Turkey.

Plumage of adult male : large portion of head and throat covered with red tubercle like wattles; a coarse beard like tuft of black bristles hanging from center of chest; legs provided with spurs; above and below metallic,

tipped with velvety black; greater wing coverts copper color, tipped with black; tail brown, both it and its coverts tipped with chestnut, rusty or whitish. Plumage of adult female: similar but the chest tuft lacking, color less brilliant, size far smaller; bare area about head greatly restricted. Wing of adult male 21.00; tail 18.50; weight 16 to 40 lbs. Weight of adult female about 12 lbs. (Ridgw.).

Geog. Dist.—Eastern United States from southwestern Pennsylvania to the Gulf coast and west to the Plains along wooded river valleys, very local and restricted in range and numbers now; formerly north to southern Maine, southern Ontario, and up the Missouri River to North Dakota.

County Records.—Hancock; formerly occurred on Mount Desert Island, (Townsend, B. N. O. C. 1, p. 60). The species is also credited to "southern Maine" (Allen, B. N. O. C. 1, p. 55).

In view of past history there seems no reason for doubting that the Wild Turkey was once quite generally distributed throughout southern Maine, ranging eastward at least to Mount Desert, but it has been extinct in Maine for so many years that we cannot accurately state just when it ceased to exist here.

In the remote and inaccessible swamps and spots where a few still exist in the Southern States, they are found in small flocks of ten or fifteen of both sexes except in the breeding season when the gobblers fight fiercely and such small groups as hang together consist of a gobbler and the few hens he is able to win and retain by winning and defending them from a rival. They roost in trees and usually frequent the same locality until driven away. The gobbling of the male and the piping of the female is not different from the well known calls of the domestic birds. The gobbler struts in about the same manner.

When it comes time to lay the female steals away from the rest of the flock and makes a nest of a few leaves on the ground at the foot of a tree or bush in some thicket. Here she lays eight to fourteen eggs which are pale cream buff more or less heavily spotted and dotted with pale chocolate and reddish brown. An egg is said to measure 2.42 x 1.83 (Ridgw.).

Order COLUMBÆ. Pigeons.

Family COLUMBIDÆ. Pigeons.

Key to the species of COLUMBIDÆ.

- A. Tail not widely tipped with white or grayish white, and not pointed.
Domestic Pigeon or Dove.
- B. Tail pointed; widely tipped with white or grayish white.
 - 1. Back or rump olive grayish brown. Mourning Dove.
 - 2. Back or rump bluish slate color. Passenger Pigeon.

Genus COLUMBA Linnæus.

* * * * *Columba livia* Linn. Domestic Dove; Pigeon.

Plumage : variable, often slaty blue or various shades of slate, often barred and banded with same in different shades on wings, and with glossy or iridescent reflections sometimes on the head and neck of individuals; sometimes pure white or various mixtures of white and slate or bluish slate. Readily recognized in almost any phase from our two native species by the characters given in the key, which, however of course would not suffice to distinguish it from other North American species of the southwest which need never serve as a source of confusion here in Maine.

County Records.—Under this head it is sufficient to remark that in nearly every one of the larger cities and towns in the State there are Doves living in a state of freedom, belonging to nobody, seeking their food where they will and going their own way. Under these conditions the Dove ranks as an introduced species capable of holding its own and increasing in places where the population is sufficiently large to favor suitable conditions of shelter and a food supply.

The Doves are most numerous in Bangor, there being thousands here which belong to nobody. They feed on grain spilled about the freight cars and manage to pick up a bountiful living in addition to which in the residential portion of the city there are many misguided individuals who systematically feed and coax the Doves to their dwellings which would be well enough if these people were the only ones to suffer the nuisance they call into the neighborhood.

Unfortunately the Doves spend much of the time on the houses of neighbors in the region, making themselves a general nuisance by disseminating filth and engaging in noisy fights

and violent cooings at various hours, especially at early dawn when most of us would prefer a few hours more sleep. They nest in the cornices and returns of houses, constituting a source of nuisance, vermin, noise and other undesirable things, added to which they are absolutely good for nothing while alive though good when dead as an article of food.

Both birds help in building the nest which is a rather flat bulky mess of straw and twigs and two white eggs are laid, and two of these eggs from among many contributed by these persistent nuisances on my own house measure 1.55 x 1.13, 1.52 x 1.14. They nest at almost any season, as I have seen birds incubating in December and February and seen young in January. The incubation period is almost exactly fourteen days and the young are barely ready to leave the nest before another set of eggs is laid elsewhere. Both birds take turns in incubating, and the male has much affection for his mate, wooing her assiduously and seemingly remaining mated with her for a long time. He feeds her frequently by the well known method of regurgitation, and when the young birds are hatched both feed them in the same way, secreting the substance known as "pigeon milk" for them at first and later giving them ordinary grain which is partially digested.

The young do not remain in the nest much over three to four weeks. The male birds are most pugnacious, strutting back and forth on some favorite perch and cooing. If a rival comes near there is much cooing, slapping each other with their wings, pecking each other and pulling of feathers. Alas, "As gentle as a dove" is indeed a most fearful stretching of poetical license. I have seen the fight protracted until one is killed or completely exhausted, but it usually ends by one flying away before this stage is reached.

During the winter the birds congregate in large flocks about the freight sheds and grain stores in the business portion of the city, roosting on the roofs of certain buildings. Here on a cold day they may be seen on the sunny side, bunched up

into a compact flock, their fighting proclivities for once overcome by their common need of warmth. The flying of one down into the street and seemingly engaged in eating is the signal for all to follow, a few at a time.

Though it is against the city ordinances to kill Doves it is needless to state that many a bird is potted by some outraged citizen who has stood the noisy nuisance until compelled to act in self defence regardless of such law. The condition of such things does not seem to be as bad in other places than Bangor though I have noticed it in a lesser degree in many other places through the State.

Genus ECTOPISTES Swainson.

315. *Ectopistes migratorius* (Linn.). Passenger Pigeon; Wild Pigeon.

Plumage of adult male: above bluish slate color with metallic reflections on the back and sides of the neck; middle of back tinged with olive brown; inner tail feathers fuscous, the outer blackish at base ranging into slaty blue outward, with broad whitish tips; lower belly white; rest of under parts delicate vinaceous. Plumage of adult female: differs from that of male in the head being light drab, with scarcely any bluish tinge to the occiput; the upper parts more olive brown and far less metallic; breast pale grayish brown. Immature plumage: differs from the female in the feathers of the head, neck, scapulars, wing coverts and chest being slightly tipped with whitish. Wing 8.00 to 8.50; culmen 7.00.

Geog. Dist.—Formerly eastern North America, northward to Hudson Bay and west to the Plains; straggler to Nevada and Washington; now seldom reported and scattered over the more northern parts of their former range.

County Records.—Androscoggin; rare migrant, (Johnson). Cumberland; none in ten years, (Mead) (this was written in 1897). Franklin; rare migrant, (Richards). Hancock; formerly nested in great abundance according to old hunters, none since about 1887, (Knight). Kennebec; (Hamlin's List). Knox; rare in summer, (Rackliff). Oxford; rare migrant, specimens observed by different persons in the fall of 1891, (Johnson). Penobscot; formerly nesting by thousands, none for twenty years, (Knight). Piscataquis; rare, last seen in 1884, (Homer). Washington; not uncommon formerly all gone now, (Boardman). York; last seen in September, 1885, (Adams).

Of the hordes of Passenger Pigeons which formerly passed through the State in large flocks and nested abundantly within

the memory of scores of people now living, none remain now. All have left us. While practically the last birds disappeared somewhere about 1885, a few stragglers were occasionally taken until what seems to be the last Maine specimen recorded was taken at or near Dexter by Frank Rogers, August 16, 1896, which record was reported to me by Mr. Hoxie, the well known Foxcroft taxidermist.

The birds formerly nested by hundreds in hardwood growth, placing their nests by scores on the trees. The nests were very fragile and composed of sticks arranged to make a mere platform through which the eggs could be seen from below. One or two pure white eggs were laid, which measured 1.47 x 1.09. Both birds were said to assist in building the nest and incubating and caring for the young. The old settlers said that their notes were a "coo,coo" similar to but shorter and quicker than the notes of the common Domestic Dove while they also had a call note much like "see-see-see".

Their food was largely beechnuts and acorns (the so called "mast") also berries, cherries and insects. If not now extinct throughout the entire United States its extinction is not far distant. Netted by the million, met by destructive man at every feeding and breeding place, is it any wonder that the countless millions of the past are with us no longer?

Genus ZENAIDURA Bonaparte.

✓ 316. *Zenaidura macroura* (Linn.). Mourning Dove; Turtle Dove; Carolina Dove.

Plumage of adult male: grayish brown above changing to bluish slate on crown and to vinaceous on forehead; sides of neck glossy metallic purple; a small black mark below ear; outer tail feathers slaty gray towards base, outwards banded with black and tipped with white and ashy; chest and breast vinaceous, ranging lower down into cream buff and into paler on the under tail coverts. Plumage of adult female: breast and forehead washed with grayish brown; the ear spots smaller and not decidedly black; not so glossy metallic; otherwise similar. Immature plumage: feathers of the upper parts and chest with paler tips and more brownish; no gloss on neck and ear marks lacking. Wing 5.60 to 6.00; culmen 0.52.

Geog. Dist.—North America from southern Maine, southern Canada and British Columbia to Panama and the West Indies, breeding locally throughout its range; wintering from southern Illinois and New York southward throughout its range.

County Records.—Androscoggin; (Pike). Cumberland; probably a rare summer resident, (Brown, C. B. P. p. 23); one in 1898, one in 1900, one in 1901, (Lord). Hancock; one seen November 21, 1899 and one March 21, 1900 near Bucksport, (Mrs. W. H. Gardner). Knox; rare in summer, (Rackliff). Penobscot; it has occurred on the University of Maine campus in late summer, (Harvey). Sagadahoc; scattering, spring and fall, (Spinney). Washington; accidental, (Boardman). York; one shot at Eliot in the summer of 1893 and three or four seen since, (H. P. Libby).

The Turtle Dove is a rare straggler into the State, and a rare summer resident of our southwestern sections. It occurs at almost any date from March twenty-first to November twenty-first. Here in Maine they occur only by single individuals or pairs, but in the southern and western states where I was well acquainted with their habits they were frequently found in flocks of forty or fifty in the fall and winter.

In southern California they frequented the mesas feeding on various weed seeds and also were found in numbers along the river bottoms. When they took wing they made a peculiar whistling sound with their wings. As spring approached and they commence to pair the mournful drawn out "ah-co-o-o-o-c-o-o-o---c---o-o-o---o---oo-o" of the the male wooing its mate frequently resounded through the air, sounding like the wail of a banshee or some departed spirit bemoaning its sad lot. This is varied by taking frequent flights up to a height of thirty feet and sailing downward to alight again.

Both birds aid in building the nest which is a mere platform of sticks or sometimes the deserted nest of a Grackle, Robin or some other bird is used. In the east the nest is placed in trees, usually in hardwood varieties, but in the west some low bush or the branches of the "prickly pair" are often utilized. Almost invariably two eggs are laid, these almost always making a pair of birds, one of each sex.

The eggs are pure white and two from a nest in a willow

bush, four feet from the ground, which I took near San Diego, California, May 15, 1891, measure 1.08 x 0.83, 1.06 x 0.80. From two to several broods are reared in a season according to locality, often in southern California nests with young being found practically every month in the year. The male bird does his share of the work and is very attentive to the female and young.

Order RAPTORES. Birds of Prey.

Suborder SACORHAMPHI. American Vultures.

Family CATHARTIDÆ. American Vultures.

Key to the species of CATHARTIDÆ.

- A. Wing over 19.00; naked skin of head and base of bill bright red.
Turkey Vulture.
- B. Bill under 19.00; naked skin of head and base of bill blackish.
Black Vulture.

Genus CATHARTES Illiger.

325. *Cathartes aura* (Linn.). Turkey Vulture; Turkey Buzzard.

Plumage of adults: head and neck naked and with the base of the bill bright red; otherwise glossy black with grayish brown edgings. Immature plumage: head covered with down like feathers. Wing 19.00 to 23.00; culmen 1.15; tarsus 2.20.

Geog. Dist.—Temperate North America from New Jersey, Saskatchewan Valley, and British Columbia southward to Tierra del Fuego and the Falkland Islands.

County Records.—Cumberland; one seen at Scarboro Beach August 5, 1904, (Deane, Auk 1905, p. 79); one at Standish in summer of 1874, (Smith, F. & S. 20, p. 26). Oxford; one taken at Denmark in March, 1892 by Abel Sanborn (Mead, Me. Sportsman, July, 1898, p. 13) this bird is shown to be the same one recorded erroneously by Gushee, F. & S. 1883, p. 245 as taken at East Fryeburg, the wrong locality being given and likewise wrongly recorded by Smith (F. & S. 20, p. 285) as a Black Vulture. Penobscot; one seen near Bangor at Whiting's Hill, he sat for a long time with his wings stretched up above his head, as the Eagle is represented on the

"buzzard dollar", (Hardy). Washington; very rare, one specimen taken in Calais, (Boardman). York; one killed in Buxton, December, 1876, (Brown, C. B. P. p. 23). Mr. Hardy knows of two instances of birds being taken in bear traps which from their description and bare red heads as described must have been this species, and while taken in Maine, the exact locality is not given by him.

The Turkey Vulture occasionally straggles into Maine, there being four specimens actually taken and preserved, two more taken in bear traps and not preserved, and two more seen, a total of eight in all known for the State. Two other specimens ascribed to Mr. Boardman as taken in Maine, were actually as I have it on Mr. Boardman's own authority taken over the line in NEW BRUNSWICK. These stragglers are taken or seen at various seasons from March to December.

I became well acquainted with these birds in California. It was a very common sight to see from one to a dozen or more soaring in graceful circles far up in the air. When some stricken animal or other carrion was *seen* the birds descended in gradual circles until after soaring some time about the prey they decided it was safe to alight. Often only one bird would be in sight at the time when some carrion was first discovered by it, but soon after its landing dozens would be seen in various stages of arrival.

When on the ground they hopped or half flew with clumsy movements to the carcass at which they dove with their bills until gorged, when if undisturbed they would either sit hunched up in a semi-comatose condition on the ground, wings semi-outspread drooping or if trees were at hand they flew into them to sit likewise.

Practically the only sound I have ever heard them utter is a slight hiss. If disturbed when gorged they often vomit up their food until sufficiently lightened to flop clumsily along the ground until able to rise and when only a couple of feet above the ground gracefully take up their soaring flight if any wind be blowing to aid them. I have never known of their killing any kind of game themselves though they will eat almost anything

already dead, whether it be fresh killed or in the last stages of putrefication and maggotism.

They usually nest in small caves in the rocks in the west, or in the east in hollow stumps or trees or on the ground. Two eggs are laid or more rarely three or very seldom indeed four. These are creamy white or white, spotted and blotched, chiefly toward the larger end with chocolate brown, reddish brown and lavender.

Two eggs found in a cave which was about four feet long by two across and far up the side of a canyon were taken near San Diego, California, March 25, 1894. These eggs measure 2.70 x 1.80, 2.76 x 1.89. No nest was made. The young are covered with a soft white down soon after hatching. They are fed by the parents on semi-digested carrion.

Genus CATHARISTA Vieillot.

326. *Catharista urubu* (Vieill.). Black Vulture; Carrion Crow.

Plumage of adults: head and neck naked and like base of bill blackish; otherwise glossy black with a silvery appearance to the under side of the wings. Immature plumage: similar but seemingly not so glossy.

Geog. Dist.—South Atlantic and Gulf States, north to North Carolina and the lower Ohio Valley, west to the Plains, ranging southward throughout much of South America; straggler north to Maine, New York and South Dakota.

County Records.—Kennebec; one taken by me, September 25, 1897, at Whitefield, (Powers, Maine Sportsman, Nov. 1897, p. 8). Piscataquis; one taken alive near Dover, August 20, 1901, was seen by me at the shop of Mr. Hoxie, the taxidermist, (Knight). Washington; not uncommon some seasons, (Boardman); under date of November 3, (1892) Mr. Geo. A. Boardman writes me as follows: "Our local taxidermist (Calais, Me.,) received a Black Vulture which was killed here. This makes the sixth I have known to be taken in this vicinity, while only one specimen of the Turkey Buzzard has been secured in this locality" (Dutcher, Auk 10, p. 82); Eastport, (Deane, B. N. O. C. 5, p. 63); I have in my collection an adult male taken in this town, (Lubec), August 25, 1904, (Clark, J. M. O. S. 1905, p. 23). York; Mrs. Dixon has a stuffed Black Vulture which was shot near here, having probably followed up the Piscataquis River to a slaughter house near here (Eliot) where he made himself at home, roosting on the barn at night; he ate quantities of the entrails thrown out by the butchers and after a few days Mrs. Dixon had him shot, (W. L. Fernald).

Occasionally a few straggle into Maine, even occurring in some few numbers near Calais some seasons, according to Mr. Boardman, in former years, but since 1897 Mr. Clark's specimen seems to be the most recent one recorded. This species is a common scavenger in many southern cities. It is not a "king of the air" soaring with far more difficulty than the Turkey Vulture and frequently flapping its wings. In habits it acts very similarly to the Turkey Vulture.

Mr. Hoxie has recorded a colony as breeding on Buzzard Island, near Beaufort, North Carolina. He states that about twenty pair nest here, generally placing their eggs on the ground far under the dense tangled plants in a thicket of yucca. The nests are best located by following the winding paths made by the birds through this growth. In other localities the birds also nest on the ground, either in dense thickets or in hollow logs.

Two eggs in my collection from a nest on the ground among rocky cliffs, Perdinalos River, Texas, March 11, 1893, measure 2.90 x 2.06 and 2.94 x 2.04. They are a pale green in color with rather large, sparse scattered markings of chocolate and faint ones of lilac and lavender, and are readily distinguished from any eggs of the Turkey Vulture.

Suborder FALCONES. Vultures, Falcons, Hawks, Buzzards, Eagles, Kites, Harriers, etc.

Family FALCONIDÆ. Vultures, Falcons, Hawks, Eagles, etc.

Key to the species of FALCONIDÆ,

- A. Wing over 20.00.
 - 1. Tarsus wholly feathered. Golden Eagle.
 - 2. Only upper part of tarsus feathered. Bald Eagle.
- B. Wing under 20.00.
 - 1. Breast or other under parts barred.

- §. Nostril small, circular and with a prominent central bony tubercle; scales on front of tarsus numerous and rounded. Duck Hawk.
- §§. Nostril not rounded and without central bony tubercle; scales on front of tarsus transverse and squarish or no scales.
- ?. Tarsus wholly feathered. American Rough-legged Hawk.
- ?? Tarsus not entirely feathered.
 - a¹. Front of tarsus smooth or scales more or less obsolete.
 - b¹. Wing under 8.80; tail feathers equal or nearly so. Sharp-shinned Hawk.
 - b². Wing over 8.80; outer tail feathers half an inch shorter than inner ones or upper tail coverts white.
 - c¹. Upper tail coverts not white; outer tail feathers half an inch shorter than inner ones. Cooper's Hawk.
 - c². Upper tail coverts white. Marsh Hawk.
 - a². Front of tarsus with sharply defined, more or less square transverse scales.
 - b¹. Three outer primaries notched.
 - c¹. Tail barred with many narrow blackish bars. Swainson's Hawk.
 - c². Tail with only two or three broad whitish bars. Broad-winged Hawk.
 - b². More than three of the outer primaries notched.
 - c¹. Tail reddish or rufous, occasionally with a black band. Red-tailed Hawk
 - c². Tail not reddish or rufous.
 - d¹. Tail dark or black with several grayish or whitish cross bars. Red-shouldered Hawk.
 - d². Tail gray with several blackish bands. American Goshawk.
- 2. Breast or other under parts not barred.
 - §. Under parts not streaked; tarsus entirely feathered. American Rough-legged Hawk.
 - §§. Under parts streaked or spotted.
 - ?. Outer primary not barred or rarely with a few imperfect bars at its base only.
 - a¹. Scales on front of tarsus numerous, small, rounded. American Osprey.
 - a². Scales on front of tarsus more or less squared and transverse.
 - b¹. Only three outer primaries notched.
 - c¹. Wing under 13.00. Broad-winged Hawk. (Immature).
 - c². Wing over 13.00. Swainson's Hawk. (Immature).
 - b². More than the three outer primaries (usually four) notched.

- c¹. Upper tail coverts pure white. Marsh Hawk. (Immature).
 - c². Upper tail coverts not pure white.
 - d¹. Lesser wing coverts prominently margined with rufous. Red-shouldered Hawk. (Immature).
 - d². Lesser wing coverts not prominently margined with rufous. Red-tailed Hawk. (Immature).
 - ?? . Outer primary prominently or numerously barred with dark bars.
 - a¹. Wing under 10.00.
 - b¹. General color of back rufous. American Sparrow Hawk.
 - b². Back not rufous.
 - c¹. Second primary longest; back fuscous or bluish slate. Pigeon Hawk.
 - c². Fourth primary longest.
 - d¹. Wing under 8.80; tail feathers nearly equal. Sharp-shinned Hawk. (Immature).
 - d². Wing over 8.80; outer tail feathers half an inch shorter than the inner ones. Cooper's Hawk. (Immature).
 - a². Wing over 10.00.
 - b¹. Second primary longest.
 - c¹. First quill longer than third; tail under 9.00. Duck Hawk.
 - c². First quill shorter than third; tail usually over 9.00.
 - d¹. Lower tail coverts pure white. White Gyrfalcon.
 - d². Lower tail coverts more or less marked with dusky.
 - e¹. Lower parts with dusky prevailing. Black Gyrfalcon.
 - e². Lower parts with dusky not prevailing.
 - f¹. Top of head uniform dusky or with dusky prevailing. Gyrfalcon.
 - f². Top of head much streaked with white, or with white prevailing. Gray Gryfalcon.
- (Note the Gyrfalcons are hard to tell apart, and this key is not satisfactory for distinguishing the last three, but is the best I can do).
- b². Second primary not the longest, either the third or fourth longest.
 - c¹. Upper tail coverts white. Marsh Hawk.
 - c². Upper tail coverts not white. American Goshawk. (Immature).

Subfamily ACCIPITRINÆ. Kites, Buzzards, Hawks, Goshawks, Eagles, etc.

Genus CIRCUS Lacedpede.

331. *Circus hudsonius* (Linn.). Marsh Hawk; Harrier; Blue Hawk.

Plumage of adult male: upper tail coverts white; tail gray, more or less barred with blackish; upper parts and upper breast gray; breast and belly white with rufous spots and bars. Plumage of adult female: upper tail coverts white; the outer tail feathers barred with buff and black, the inner with ashy and black; upper parts fuscous, streaked on head and neck and margined on wing coverts with rufous; below ochraceous buff, streaked with fuscous. Immature plumage: differs from the female in being darker above and far darker below. Wing 13.00 to 15.50; tarsus 3.00.

Geog. Dist.—North America in general; in winter south to Panama, Bahamas and Cuba.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; local summer resident along the Aroostook and Woolastook Rivers and their tributaries, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, (Dorr). Kennebec; rare, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; local summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common migrant, rare summer resident, (Morrell). Waldo; local summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; breeds, (Adams).

In the vicinity of various meadows, marshes and similar localities this species is a local summer resident, usually only one pair to a given locality of considerable area. As a migrant it occurs generally and commonly, first appearing in spring between April fifteenth and April twentieth and in the fall usually gone for the larger part by the last of September, very exceptionally it has been taken as late as November twelfth.

They are birds of the open meadow and mere, flying along close to the ground in search of mice, birds, reptiles, and insects. Small birds and poultry form only a minor portion of their diet which is indeed chiefly mice. When hunting they often keep up a continuous screeching as they fly along, swiftly and

strongly, while at other times they are equally as silent. I have often fancied that their cries were to scare small game beneath them into moving and thus being betrayed to the sharp eyes of the Hawk.

In summer they delight to fly in circles high over their marshes, uttering a cry of alarm at the approach of the human intruder and if the nest be near at hand swooping downward in vain attempt to scare the invader away. At times they have an alarm call not greatly different from the peculiar "cutty cutty" some times uttered by a Herring Gull. Their nest of weeds, grass, rushes, and similar material is well made, placed on the ground in a marsh or meadow and concealed quite well by the growth around it. Often a nest will contain fresh or slightly incubated eggs along with others in various stages up to those nearly ready to hatch. Three to five pale bluish white eggs are laid, usually unspotted but occasionally spotted slightly or rarely very heavily with brownish. Four eggs in varying stages of incubation were found at Bangor, June 4, 1892, in a nest in a marsh. These eggs measure, 1.79 x 1.49, 1.89 x 1.51, 1.85 x 1.49, 1.86 x 1.53.

Genus ACCIPITER Brisson.

Subgenus ACCIPITER.

332. *Accipiter velox* (Wils.). Sharp-shinned Hawk.

Plumage of adults: above slaty or bluish gray, the primaries barred with dark; tail ashy gray with a whitish tip and dark cross bars; throat whitish with darkish streaks; underparts transversely barred with pale rufous and white. Immature plumage: upper parts fuscous with rufous margins to feathers; below whitish, more or less streaked and spotted with blackish or darkish. In all plumages the tail nearly square so that the outer feathers are nearly as long as the others. Wing of adult male 6.00 to 7.00; wing of adult female 7.00 to 8.50; tarsus of male 1.95; tarsus of female 2.12.

Geog. Dist.—North America; breeds from the southern United States northward; winters from Massachusetts to Guatemala.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; not uncommon locally as a summer resident, (Knight). Cumberland; common summer resident, (Mead); one seen in Portland several

times about February 5, 1905, (Brownson, J. M. O. S., 1905, p. 21); one taken at Westbrook, January 31, 1907, (Norton, J. M. O. S. 1907, p. 9). Franklin; common summer resident, (Swain). Hancock; local summer resident, (Knight). Kennebec; rare, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; a not rare local summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common spring and fall, (Spinney). Somerset; not common summer resident, (Morrell); saw a flock of over a hundred migrating at Jackman in August, 1895, (Knight). Waldo; breeds quite generally, (Knight). Washington; abundant summer resident, (Boardman). York; (Adams).

The first stragglers usually arrive about April fifth and the great bulk have left by late September though an occasional straggler is found even up to late October and it is exceptionally found near Portland in January and February. As a breeding bird it occurs generally distributed through the entire State, being more or less local and one pair of birds exercising control over considerable territory to the exclusion of others of their kind.

The nest is usually situated in a spruce, fir or hemlock tree, occasionally in one of the hard wood trees or even in a hole in a tree. The nests in trees are situated on horizontal limbs, composed of sticks and twigs, hemlock bark, cedar bark and similar materials. Many nests are not lined, others are lined with fine cedar bark, grass, green hemlock twigs, pine needles and occasionally poplar leaves.

Three to five eggs, usually the latter number, are laid, and these are among the most handsome eggs one can desire to see. The eggs are pale white or pale greenish white, most handsomely and heavily spotted, blotched, specked and marled with light brown, dark brown, drab, fawn, lavender, and even black.

Many eggs are wreathed about the larger end, others wreathed about the middle, or exceptionally I have seen eggs wreathed about the smaller end unmarked elsewhere. Other eggs are very evenly spotted and blotched over the entire surface, in fact different sets are invariably utterly different in markings etc., while the eggs from the same set usually resemble each

other very closely in general style. Five eggs taken from a nest of sticks in a spruce tree in a small evergreen grove at Stockton Springs, Maine, June 1, 1892, measure 1.43 x 1.21, 1.42 x 1.21, 1.46 x 1.22, 1.48 x 1.22, 1.46 x 1.23.

In early June if one on entering a thick evergreen woods hears a "cac, cac, cac," much resembling the call of the Flicker but distinct therefrom, then they may safely conclude that this is the cry of the Sharp-shinned Hawk and that a nest is near by. One or a pair of these birds will make quite a disturbance when they discover an intruder on their nesting grounds, though at times I have sometimes been unaware that a pair of these birds were in the vicinity until on thumping a tree in which a dilapidated Crow's nest was seen one of these Hawks would leave the nest which it had appropriated and remade to answer its purposes.

Both birds take turns in incubating and after the young are hatched have a hard time to keep the hungry mouths full.

They are very bold and dashing and many of the depredations on poultry which are wrongly attributed to others of the larger Hawks are more properly the work of this species or its close relative, Cooper's Hawk. The nest above described at Stockton Springs was located on account of the repeated visits of a pair of these birds to a poultry farm from which they were taking away ten to twelve young chicks a day. After the nest was located and both birds killed these depredations ceased, thus placing the blame.

The species in question *prefers* small birds and poultry to almost any other food and will make the boldest and most dashing forays to obtain what they desire. I have even known of their dashing into a farm yard and taking off a nearly full grown chicken from in front of the farmers' very face as the chickens were being fed. They come like a bullet and before a person is able to fully realize what has happened they are away with a chick in their talons. In eating they seem rather particular, holding the game in their talons and plucking away the

feathers from the breast with their bill before beginning to feast. The small size, long tail square at the end and swift flight are points which serve to identify this species in the air.

333. *Accipiter cooperii* (Bonap.). Cooper's Hawk.

Plumage of adults: above slaty or bluish gray, the primaries barred with dark; crown blackish; tail rounded, the outer feathers on each side about half an inch shorter than the others; tail ashy gray with dark crossbars and a lighter tip; throat whitish with darker streaks; under parts transversely barred with pale rufous and white. Immature plumage, upper parts fuscous with rufous margins to feathers; below whitish, more or less streaked and spotted with blackish or darkish. To be told by the rounded tail from the preceding. Wing of adult male 9.00 to 9.50; wing of adult female 10.00 to 11.00; tarsus of male 2.40; tarsus of female 2.70.

Geog. Dist.—North America, breeding from southern British America and Newfoundland to Mexico; winters from Massachusetts to Southern Mexico.

County Records.—Androscoggin; common summer resident, (Johnson). Cumberland; common in migration, (Lord); rare, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, rare, common migrant, (Knight). Kennebec; rare, (Gardiner Branch). Knox; (Rackliff). Oxford; summer resident, (Johnson). Penobscot; seemingly a very rare summer resident, but not uncommon in migration (Knight). Piscataquis; not uncommon, (Homer). Sagadahoc; common migrant, (Spinney). Somerset; rare summer resident, (Morrell). Waldo; occasional at least, (Knight). Washington; not common, one of our rarest Hawks, (Boardman). York; (Adams).

Some seasons Cooper's Hawk occurs quite generally and locally even commonly in migration, but as a breeding bird it is decidedly rare in most sections of the State. In spring they arrive about April fifth, and the last fall stragglers are gone in late October as a rule. This species has the same dashing habits and is as great a pest to the poultry, game and small birds as its dashing relative, the Sharp-shinned Hawk, and being larger and more powerful can take away somewhat larger and heavier poultry.

They are a less noisy bird than their relative, only occasionally making a noise during the nesting season when their treasures are seemingly in actual danger at which time they utter a short cackling protest.

An old Crow's nest or some other deserted nest of a large bird is usually selected and patched up a little. Three to six, usually four or five eggs are laid and these are pale bluish white, sometimes unspotted, or often slightly and occasionally very heavily and handsomely spotted and scrawled with brown, drab and lavender. A majority of the eggs are only very slightly or not at all spotted.

Four eggs which were in an old Crow's nest thirty-five feet up in a spruce tree at Lancaster, New Hampshire, May 12, 1896, measure 1.88 x 1.53, 1.90 x 1.53, 1.93 x 1.53, 1.90 x 1.55. The young are covered with a white down soon after hatching. Usually, even in the southern portion of its range only one brood is reared, but if robbed the birds will lay again and again until they succeed in hatching their young.

Subgenus *ASTUR* Lacepede.

334. *Accipiter atricapillus* (Wils.). American Goshawk.

Plumage of adults: a white line over the eye; head blackish; upper parts bluish slate color; outer tail feathers somewhat fuscous, and marked with darker; tail whitish at tip; the throat and breast streaked with darkish and all under parts with irregular wavy bars of grayish and whitish. Immature plumage: fuscous above, the feathers with rufous margins; primaries black barred; tail brownish gray with dark bars; below whitish with black streaks or spots. Wing of male 12.00 to 13.00; wing of female 13.00 to 14.00; tarsus 2.80.

Geog. Dist.—Northern and eastern North America; breeding from northern tier of States, in Canadian fauna, northward; wintering south to the Middle States and southern Rocky Mountain region; accidental in England.

County Records.—Androscoggin; common migrant, (Johnson). Cumberland; common, have taken its eggs here, (Mead); uncommon October to May, (Brown, C. B. P. p. 22). Franklin; rare summer resident, (Swain). Hancock; rare summer resident, common some winters, (Knight). Kennebec; (Gardiner Branch). Knox; winter, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; common some winters, rather rare as a summer resident but found breeding several times here, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; scattering, fall and spring, (Spinney). Somersset; rare visitant, (Morrell); rare summer resident of northern county, (Knight). Waldo; not infrequent some winters, (Knight). Washington; not uncommon, breeds, (Boardman). York; (Adams).

As a winter bird the species occurs throughout the State at dates between October and May, and some seasons there is a regular influx of migrants so that locally they may even be called common. As a summer resident it is much rarer, occurring scattered through the portions of the State within the Canadian fauna. They are very destructive to all forms of bird life as well as the smaller mammals. Game birds and rabbits especially suffer by this species, and while it is very fond of poultry and will carry off the largest hens readily, the damage in Maine is not especially great from this cause.

The Goshawk is most abundant here at the season when poultry is housed, while those breeding here are usually located in more remote places where there is not much poultry. They are, however, a very distinct menace to our game birds. I have seen a Goshawk sit perfectly still on a tree, near the trunk and erect so that it resembled a stub, and keep perfectly still for a long time, but how quick the scene changed when game appeared! A dash, and away with a Ruffed Grouse before I could hardly catch my breath!

They nest in late April or early May, placing the large bulky structure of sticks and twigs, lined with hemlock bark, green hemlock twigs, willow and poplar twigs, with the expanding catkins attached, in some convenient tree. Often the nest is in a small birch or maple not over thirty feet up, at other times it is in an evergreen, either pine, spruce or fir, but hard wood growth seems to be preferred by them. Two eggs from a nest of sticks in a poplar tree were collected at Riding Mts., Manitoba, April 30, 1889. These eggs were plain bluish white and measure 2.26×1.73 , 2.24×1.76 . The shell of the eggs has a peculiar pitted, granulated appearance.

Such nests as I have seen in Maine were all with young, one found in early June having small young covered with white down, while others later contained young half fledged, but still with much of the down adhering to them. It is late July before the young seem able to leave the nest. The number of

young varies from two to five in such cases as I have observed, but more often four. They are said to occupy the same nest in successive years sometimes but did not do so in such cases as I have personally observed.

Genus BUTEO Cuvier.

337. *Buteo borealis* (Gmel.). Red-tailed Hawk; Red-tailed Buzzard.

Plumage of adults: four outer primaries notched; tail red or rufous with black band near end and white tipped; upper parts grayish brown, edged with rufous, ochraceous buff and whitish, no rufous edging to wing coverts; breast rather heavily streaked with grayish brown and ochraceous buff; a rather broken band of blackish spots and bars across belly; otherwise whitish. Immature: tail not red or rufous, more or less banded with darkish. Wing 14.00 to 16.00 in male; 15.50 to 16.50 in female; tarsus 3.10.

Geog. Dist.—Eastern North America, north to 60°, west to the Plains; practically resident where found.

County Records.—Androscoggin; rare summer resident, common migrant, (Johnson). Aroostook; rather rare local summer resident, (Knight). Cumberland; common resident, (Mead); not seen for years until fall 1901 when I received four (Lord). Franklin; common summer resident, (Swain). Hancock; summer resident, (Dorr). Kennebec; rare, (Gardiner Branch). Knox; migrant, (Rackliff). Oxford; breeds, (Nash). Penobscot; a not uncommon local summer resident, (Knight). Sagadahoc; scattering, fall, winter and spring, (Spinney). Waldo; summer resident, (Spratt). Washington; not uncommon summer resident, (Boardman). York; (Adams).

Though scattering throughout the entire year the species is most generally noticed in fall during the hunting season, and is not at all unusual locally in spring and summer as well. They prefer to frequent large hardwood growth, swampy growth of this kind near some body of water seemingly being preferred by them in Maine. Usually they are rather slow and inclined to remain on one perch for hours without moving, but are well able to move quickly when occasion arises.

They both catch their own prey and feed on offal the latter a thing which any of the Accipiters do not condescend to do. Their chief food seems to be mice, frogs, grasshoppers, crickets and other larger insects, small birds and poultry to a lesser

degree. Capt. Spinney has recorded this species as taking "decoy" Ducks. They build a large bulky nest of sticks, twigs and bark, lined with bark and twigs. Usually in Maine they select a poplar, birch or ash as a nesting site, though using occasionally almost any tree available, and placing the nest from thirty to seventy feet up, generally in rather open swampy woods.

Two to four eggs are laid, perhaps more often two with us, and these are white, more or less spotted and blotched with yellowish, reddish and cinnamon brown. A nest taken May 6, 1895, was in an elm tree sixty feet from the ground. The nest was the usual bulky affair of sticks, lined with dry leaves and bark, and was three and a half feet in diameter. The cavity containing the eggs was four and a half inches deep. The three eggs measure 2.27×1.82 , 2.27×1.77 , 2.29×1.83 .

When a nest is occupied a smart rap on the trunk of the tree will usually drive off the parent bird which hangs around in the vicinity occasionally uttering a screeching squeal. If the nest is climbed to the bird may get more vociferous and occasionally swoop down toward the intruder, while often the bird's mate arrives on the scene to add his notes of displeasure.

The eggs are usually laid in late April or early May, and only one brood is reared. The same nest is usually occupied for many consecutive seasons, though in some instances there are two or three nests in the vicinity which the birds may occupy from season according to taste. The young are covered with white down.

339. *Buteo lineatus* (Gmel.). Red-shouldered Hawk;
Winter Falcon. Chicken Hawk.

Plumage of adults: lesser wing coverts rufous; above grayish brown, the feathers edged with rufous and whitish; the four outer primaries notched; all primaries barred with black and white; tail blackish with white bars, white tipped; throat streaked darkish; below rufous, barred with whitish. Immature plumage: tail grayish brown, rather dimly barred with fuscous and more or less rufous; lesser wing coverts rufous margined; underneath

whitish, streaked and spotted with blackish. Wing of male 11.00 to 13.00; wing of female 13.00 to 14.00; tarsus 3.15.

Geog. Dist.—Eastern North America, west to the plains and Texas, south to Florida and the Gulf States, north to Manitoba and Nova Scotia; wintering from Massachusetts southward.

County Records.—Androscoggin; common summer resident, (Johnson). Arrostook; general summer resident, not rare, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; not rare summer resident, (Knight). Kennebec; common, (Powers). Knox; migrant, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; not rare summer resident, (Knight). Piscataquis; rare, (Homer). Sagadahoc; common migrant, spring and fall, (Spinney). Somerset; common summer resident, (Morrell). Waldo; local summer resident, (Knight). Washington; not uncommon summer resident, (Boardman). York; breeds, (Adams).

The Red-shoulder is the most generally seen of our larger Hawks, exclusive of the Osprey which is of course more local. In common with the Red-tail it shares the name of Chicken Hawk and Hen Hawk which name is also applied very indiscriminately to other species of Hawks also. They have been found in the State from late March to late October, but there seem to be no records of their wintering though they might be expected to remain through the winter in southern Maine at least. They like to frequent rather open hard wood growth either in some swampy place along a stream or pond or in highland woods near fields and clearings.

The bulky nest of sticks and twigs, is usually placed on the limbs of hardwood trees at heights of twenty to seventy feet, and sometimes also in hemlock or spruces or even pines. The nest is usually placed on a limb or limbs and against the trunk, or sometimes out on the branches. Some nests are lined with hemlock or cedar bark while many contain the half opened catkins of willows and poplar, and often fresh green leaves of poplar or birch. The same nest is often used for many successive seasons.

Two to even six eggs are laid but the majority of our Maine nests contain only two or three, and these are laid in late April or early May. Three eggs from Pittsfield, taken by Mr. Morrell, were in a nest situated in a yellow birch tree

thirty-seven feet up in a crotch formed by the trunk and three branching limbs. This nest of sticks and twigs was lined with *Usnea*, bark and a few sprays of hemlock. Outside this nest measured thirty-three by twenty-two inches, the inner diameter was eight inches and the depth of the cavity was three inches.

Both Hawks were said to be rather vociferous, sailing overhead and calling "kee-wooh, kee-wooh" in shrill tones. On May 5, 1897, these eggs were taken and were nearly fresh. They measure 2.16×1.76 , 2.10×1.74 , 2.14×1.70 . I have heard the birds utter a scolding "cac, cac, cac" and a long whistled "whee" when very much excited.

The incubation period is twenty-seven days, the newly hatched young are covered with a pale creamy or slightly yellowish white down. In nests with young there are often found mice, rats, squirrels, frogs and sometimes chickens. The old birds feed on similar material, various mammals, snakes and other reptiles constituting the greater portion of their food, but small birds, game birds and poultry are also taken to some extent. They certainly destroy enough injurious mammals to offset the damage they do to poultry.

They will sit motionless on a perch for hours, greatly resembling a stub, but also delight to sport in the air, flying in circles overhead in a seemingly aimless manner. When engaged in hunting they seem more business like, sweeping along not far from the ground and pouncing on mice and other similar mammals in the fields and meadows.

The ground color of the eggs varies from whitish to pale yellowish or bluish white and they are generally more or less spotted, blotched and smeared with various shades of reddish brown and fainter markings of pearl gray or lavender. As a rule the eggs are rather heavily and handsomely marked, especially toward the larger end, and occasionally an egg will be found with one large confluent blotch covering the larger end entirely. Both birds help in building the nest and take turns in incubating and feeding the young.

Subgenus TACHYTRIORCHIS Kaup.

342. *Buteo swainsoni* Bonap. Swainson's Hawk.

Plumage of adult male in lighter phase: forehead, chin and throat white; above uniform grayish brown; chest and upper breast rufous, only occasionally slightly marked with whitish; rest of lower parts whitish, sometimes unmarked but usually barred or spotted with brownish; tail with indistinct darkish bars. Plumage of adult female: differs from that of male in the chest patch being grayish brown, bird larger in size. Plumage of adults in dark phase: whole plumage sooty brown, often appearing nearly black when the bird is in the air; the under wing coverts and the tail above and below sometimes spotted or slightly barred with white. Immature plumage: above fuscous brown, margined with rufous and buffy; below ochraceous buff, more or less spotted and streaked with blackish. Only three outer primaries notched in all plumages. Wing of male 14.50 to 15.80; wing of female 15.00 to 17.00; tarsus of male 2.60; tarsus of female 2.70.

Geog. Dist.—Western North America from Wisconsin, Illinois and Texas to the Pacific, north to Arctic regions and south to the Argentine Republic; straggles east to Massachusetts and Maine.

County Records.—Hancock; one taken at Gouldsboro, September 15, 1886, in melanistic plumage, (Brewster, Auk 5, p. 424). Penobscot; one at Glenburn, May 19, 1886, (Brewster, Auk 5, p. 424) (also melanistic); have seen at least two taken here, both melanistic, (Hardy). Washington; taken at Calais, October 8, 1892, (Brewster, Auk 10, p. 82).

Occasionally a stray individual straggles eastward into Maine and for some reason such specimens all seem to be in the dark phase of plumage. In southern California I became well acquainted with the species. They were very fond of perching on the ground usually near the edge of a canyon, or sometimes in trees in the river bottoms and sitting thus for long periods, seemingly lost in meditation. They also spend much time in the air sailing in circles and keeping up a constant calling.

Their chief food seemed to be the ground squirrel and also grasshoppers and crickets, and to a lesser extent gophers, moles, lizards, horned toads and snakes, neither do they disdain carrion when other food is not readily obtainable.

A majority of the nests I examined were in cottonwoods at heights varying from twenty-five to fifty feet, and the nests seemed to be old nests of the California Crow lined with many green cottonwood leaves. The deserted nests of other Hawks

and Owls in sycamores and live oaks were occasionally occupied. Occasionally a nest would be found on the ground near the top of a canyon or on the shelf of a cliff, and invariably this seemed to be a nest of some other species which had been patched up. The bird sits very closely indeed, often not leaving the nest after repeated thumpings on the base of the tree, and I have had them even remain until I touched the base of the nest before they left it, but they are usually very tame, even not in the nesting season.

A very good way of telling whether or not a Hawk's nest is occupied, and this applies to all species, is to carefully scan the edge of the nest from the ground, aided by good field glasses if necessary, when numerous feathers will usually be seen adhering to the edge of the nest, being the downy breast feathers left by the birds in their comings and goings, while often freshly broken twigs and leaves are found under occupied nests.

Though collectors have reported finding as many as four eggs in a nest I never found any number but two and think this is the usual set. Two eggs taken from an old Crow's nest at Lakeside, California, May 9, 1891, were advanced in incubation. These eggs were a greenish white color quite heavily peppered about the larger ends with umber, brown, reddish brown and gray, and measure 2.29×1.79 , 2.38×1.79 .

A set from a collector in South Dakota was found in a nest placed in an ash shrub ten feet from the ground, near the James River, town of Huron. These were fresh May 18, 1887, yellowish white in color and very slightly and faintly marked with grayish spots. These eggs measure 2.35×1.82 , 2.26×1.82 .

✓ 343. *Buteo platypterus* (Vieill.). Broad-winged Hawk.

Plumage of adults: grayish brown above, margined with buffy and rufous; two bars on the fuscous whitish tipped tail; below whitish, heavily barred with transverse marks of rufous. Immature plumage: tail grayish brown with four or five blackish, rather faint bars; below whitish, streaked

and spotted with blackish; cheeks with a moustache like series of dark streaks. Wing of male 10.00 to 11.00; wing of female 10.50 to 11.50; tarsus 2.50.

Geog. Dist.—Eastern North America, north to New Brunswick and the Saskatchewan, west to the Plains and south to Texas; wintering from southern United States to South America and the West Indies.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; not rare summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; rare summer resident, (Swain); common summer resident, (Sweet). Hancock; quite generally found as summer resident, (Knight). Kennebec; (Royal). Knox; migrant, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; breeds quite generally, not so common of late years as formerly, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common spring and fall, (Spinney). Somerset; not common summer resident, (Morrell). Waldo; not rare summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; (Adams).

They arrive from the south in early April and are all gone by early October, being commonest in migrations, but also not rare and generally distributed as summer residents throughout the State. Though generally very quiet they will make considerable fuss when they have a nest near at hand, lighting on the trees near by or flying overhead and uttering a shrill whistled "kii-e-e-e-e-".

Both birds help to build the nest and take turns in incubating. Unlike many other Hawks they seem rarely to reoccupy the same nest another season. The nest is the usual structure of sticks and twigs, lined with bark, hemlock twigs and often with green leaves and twigs of poplar, elm and basswood.

Two to four, generally three, eggs are laid and these are white, spotted, dotted and blotched with lavender, pearl gray, chestnut and umber. The spots are fewer and smaller, and the eggs are more finely dotted than are eggs of the Red-shouldered Hawk, and the eggs of the Broad-wing are smaller, measuring about 1.90 x 1.54. The birds feed on squirrels, mice, shrews, moles, frogs, snakes, grasshoppers, crickets, and more rarely on small birds. They may be rated as distinctly beneficial.

Genus ARCHIBUTEO Brehm.

347a. *Archibuteo lagopus sancti-johannis* (Gmel.). American Rough-legged Hawk; Black Hawk.

Plumage of adults in light phase: fuscous brown above, margined with ochraceous buff or whitish; basal part of tail whitish and the outer portion with two to four whitish bars; below whitish, streaked and spotted with black, on the belly a broken band of black. Black phase of plumage: blackish or black, the primaries and tail barred with whitish. Immature plumage: tail not barred, white tipped; under parts heavily marked with black and a continuous broad black band across the belly; otherwise very similar to the adult in light phase. Wing 16.00 to 18.00. The feathered tarsi as well as strongly dark marked under parts are points to determine the species by.

Geog. Dist.—Breeding from north of the St. Lawrence River northward into Arctic regions; wintering southward through the United States to Virginia.

County Records.—Androscoggin; fairly common winter resident, (Johnson). Cumberland; rare winter visitant, (Brown, C. B. P. p. 22); one November 4, 1901, (Lord). Franklin; rare, (Richards). Knox; winter, (Rackliff). Oxford; common at Norway in winter, (Verrill's List). Penobscot; rare winter visitor, or some seasons common, (Knight). Piscataquis; rare, (Homer). Sagadahoc; a few in fall and early winter, (Spinney). Somerset; a mounted specimen is in my collection from Spencer Stream, (Carpenter, Me. Sportsman, November, 1898, p. 20). Washington; very rare winter resident, (Boardman).

Rarely a few are seen as early as late October, but the chief period of occurrence of this species is from November through March, they being perhaps most frequently taken in November. While usually rare a few are taken in various portions of the State every winter, and some seasons at very rare intervals they are even locally common judging by the considerable numbers sometimes received at various taxidermists shops.

Two to five eggs are said to be laid, and the nests are usually built on cliffs, or occasionally in trees. Three eggs in my collection from Labrador were taken at Tessiujak, May 30, 1895. They are pale greenish white, spotted and blotched rather heavily with umber and brown and with fainter dots of lavender, and measure 2.18 x 1.73, 2.23 x 1.69, 2.14 x 1.70. The nest was composed of twigs, lined with grass and a few

feathers and was placed on a steep cliff. The nest was two feet across and the inner diameter was about a foot. With us they appear to be rather quiet in the daytime, being most often seen on the wing at twilight. The chief food appears to be the common field mouse.

Genus *AQUILA* Brisson.

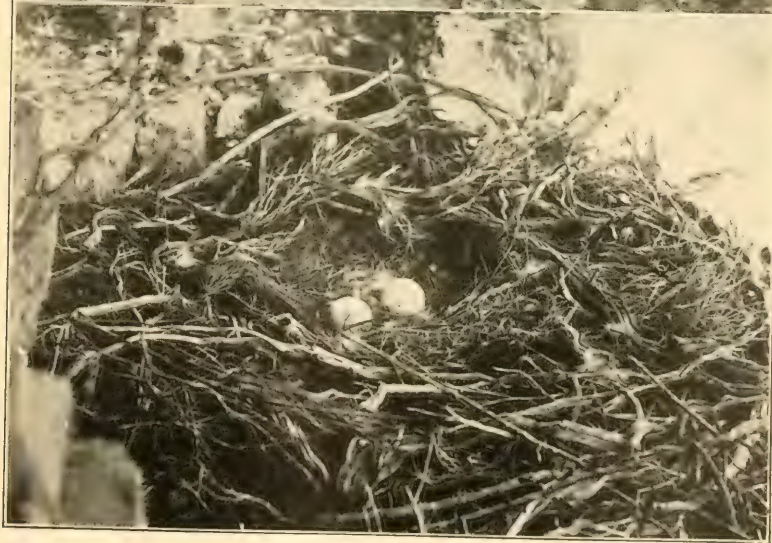
349. *Aquila chrysaetos* (Linn.). Golden Eagle.

Plumage of adults: uniform dark brown above, but paler on head and nape; tail blackish, clouded with grayish toward base or basal half of tail whitish; below dark brown. Immature plumage: base of tail with broken bars; under tail coverts ochraceous buff; otherwise much like adult. Wing of male 23.00 to 25.00; wing of female 25.00 to 27.00; tarsus of male 3.75; tarsus of female 4.20.

Geog. Dist.—Northern parts of the Old World and North America south to Mexico; in the United States breeding in the mountainous unsettled portions.

County Records.—Androscoggin; (Pike). Aroostook; one shot November 6, 1898 and mounted by Crosby, (Knight). Cumberland; taken at Peaks' Island, (Brown, C. B. P., p. 22); two near Portland, fall of 1898, (Lord); an adult male shot at Duck Pond, Windham, October 14, 1891, (Brock, Auk 13, 256). Franklin; rare, (Richards); have seen three shot in Franklin County, (Lord). Hancock; one shot at Flood's Pond, Otis, October 16, 1897, by Abraham Warren and seen by me at S. L. Crosby's, (Knight). Somerset; one taken on north branch of Dead River, at Wyman's Mt., November, 1899, (Nash); saw one at Sandy Bay Mountain in August, 1895, under conditions which indicate that it had young not far distant, (Harvey & Knight). Washington; very rare, shot in summer, (Boardman).

This species is occasionally taken in Maine, and there seems to be good reasons for believing that it occasionally breeds in the mountainous portions of the State. For instance the late Prof. F. L. Harvey and I saw one at Sandy Bay Mountain, near Jackman, in August, 1895. This bird was very uneasy and flew near us uttering its shrill cry, "kich kich kee" which was answered from a steep cliff on the side of the mountain. Judging from its actions and the answering cries which seemed more like the clamorings of young birds there would appear to have been well grown young not able to fly near at hand. If it had been the bird's mate that answered the calls there



YOUNG GOLDEN EAGLE.
NEST AND EGGS OF THE GOLDEN EAGLE.

Photograph by E. S. Cameron, Fallon, Montana. By kindness of Mr. Cameron and The Auk.

seems no reason why it should not have also appeared on the scene.

The species in question usually builds a very large bulky nest of sticks and sods, lined with twigs and grass, and this is situated on the shelf of some almost inaccessible cliff, or in California in huge live oaks, sycamores and redwoods at quite good elevations. The nesting season in California is in February and March, probably not until April in Maine.

The eggs are whitish, heavily marked with chestnut, umber and lavender. Two is the usual number, occasionally three and very rarely four. They measure about 2.97×2.37 . The same nest is usually occupied year after year, and the birds are said to remain mated for life. The food consists of squirrels, rabbits, lambs, fawns, calves, turkeys, fowl, wild ducks and geese, and similar large game.

They also feed somewhat on carrion in California. The tales of young children being carried away by Eagles which appear in the newspapers from time to time are almost without exception fictitious, and should be relegated to a proper place along with the hoop snake, glass snake, plunkus, side-hill gouger and other mythical creatures of the wilds of Maine and elsewhere.

Genus HALIÆTUS Savigny.

352. *Haliæetus leucocephalus* (Linn.). Bald Eagle; White-headed Eagle; Black Eagle; Gray Eagle; Washington's Eagle.

Plumage of adults: head, neck and tail pure white; otherwise wholly fuscous, the feathers often slightly edged with lighter; bill yellow. Immature plumage: bill black; head and neck blackish; otherwise mixed grayish brown and blackish, more or less varied by whitish; inner vanes of tail feathers with more or less whitish. Wing of male 20.00 to 26.00; wing of female 24.00 to 28.00; tarsus of male 3.00; tarsus of female 3.50.

Geog. Dist.—Chiefly the United States; resident and breeding where found.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; local, at least three or four pair about the lakes of the county, (Knight). Cumberland; summer resident, (Mead). Franklin; rare

summer resident, (Swain). Hancock; local resident, especially along the coast, about five pair of birds in the entire county, (Knight). Kennebec; very rare, (Powers). Knox; resident, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; a pair have nested near Pushaw Pond for years, and in other parts of the county there are a few pair, perhaps ten pair of birds in all, (Knight). Piscataquis; not uncommon, breeds, (Homer). Sagadahoc; common and breeds, (Spinney). Somerset; at least three or four pair breed in the county, (Knight). Waldo; one of the Hancock county pair of birds occasionally fly to the Waldo coast, (Knight). Washington; common, breeds, (Boardman).

The actual number of pair of Eagles breeding in Maine is estimated at not over 100 pair or 200 individuals, or in other words an average of five to six pair to each county and these figures, the result of careful estimates, are probably not far from correct. Large birds as well known and conspicuous as these may be seen and recognized at long distances, and it is very natural for an observer seeing Eagles almost daily to report them as common in his locality, when if the truth be carefully sought for it will be finally determined that the observer reporting the species as common is most certainly seeing a very few individuals over and over again, and especially is this true along the coast.

The Bald Eagle by no possible stretch of the imagination can be called "common", or even "not uncommon", it is actually very rare when compared in point of numbers with the actual numbers of other birds occurring in Maine. Along the coast a comparatively large number occur within a limited region while about the interior lakes fewer individuals are found occupying a far more extensive territory. For example in the region of Penobscot Bay there are about four pair of these birds which may properly be said to belong to Hancock County, nesting along the coast and on the islands, while inland in the County I know of only one pair residing.

The Knox, Sagadahoc and Lincoln birds are practically all coast residents, and judging from reports there are several pair along the coast within what may be called comparatively limited areas.

In Penobscot County the five to six pair of birds are scattered, each pair controlling a very great area. The well known "Pushaw Eagles" have been reported as ranging some twenty miles away from their nesting grounds, or in other words occupy a territory of over four hundred square miles, in fact much more territory belongs to their district, even if not used by them, for their nearest neighbors to the eastward are the Flood's Pond, Green Lake, Union River pair of birds which range more or less about the territory named and are reported as nesting on Union River waters. To the westward their nearest neighbors are the Harmony-Pittsfield-Newport pair which are said to nest in the Harmony region. To the northward their neighbors are the Ebeeme-Schoodic-Sebois pair whose headquarters are reported to be in Ebeeme waters.

The Pushaw Eagles have been known for years, some of the older inhabitants solemnly averring that their fathers spoke of seeing this same pair of birds in childhood days. It is undoubted that the natives can recognize this pair of birds, and it seems quite likely that their age is traceable back so as to indicate that a pair, only one pair, and undoubtedly the same pair of birds have been in that region nearly if not over one hundred years. That region was first settled in the vicinity of 1800 and as nearly as can be determined by conversation with various people at different times the birds were known in that region by the earliest settlers.

They nest and rear their young every year undisturbed, indeed I would give a good fair premium to the person able to reach their nest in any other way than by balloon or airship. Situated in the dead top of a lofty, nearly limbless pine that has stood the blasts of years, this nest when seen by me some fifteen years ago was well able to stand as a challenge to the ambitious oologist for a long time to come. Viewed from the ground the nest appeared, as calculated from careful measurements of the shadow of the tree, shadow of the nest and shadow of a known length of stick, to be fully ten feet in

height and was made of huge branches, sticks and similar material. The distance of the nest from the ground, determined the same way, appeared to be ninety feet. The nest seemed to be fully six feet across the top.

At the time of my visit in June there were young birds in it, and judging by the partially decayed fish on the ground they were bountifully supplied with the same by their parents.

I well remember my first view of the female Pushaw Eagle. It was a pleasant day and as we paddled up Pushaw Stream the sun shone full in our faces at the precise moment when, as we neared the pond, a crashing sound was heard in the trees and right square "in the sun" there appeared a bird which to our excited imagination appeared the whitest of white on its head, neck and tail while the rest of its plumage seemed the very blackest of black. As it passed on and swung so that the sun no longer bothered us we realized what we had the privilege of beholding. I have seen that same bird many a time since and it has always seemed to me that it really was whiter on the white parts and darker elsewhere than any other Eagles I have seen, nor do I think this is a lingering of the first impression, but to go back again to my first view of the bird.

As it flew away we continued up the stream and as we entered the pond there flew from the shore another smaller Eagle, its mate. We landed at the place whence it came and found stranded thereabouts hundreds of perch, sunfish and horned pout which had evidently been killed by some epidemic peculiar to fishes and washed up on the shore. We found where the bird had been feeding on some of these semi-decayed fish from which arose a fearful stench like unto the oft used phrase of the "searing breath" or the "breath that scorched".

Since then I have seen these birds often at various times feeding on similar material or occasionally engaged in "harrying" a pair of Ospreys and robbing them of their fish. As the Osprey arose from the water with a fish in its talons one

of the Eagles would swoop with a "cac-cac-cac" and as the Osprey dropped the fish and endeavored to escape the Eagle would deftly swoop under it and catch the fish before it had fallen very far. Only once or twice have I seen the Eagles swoop down near the shore and catch living fish for themselves and it seems likely that it is a characteristic of the entire tribe to prefer stale fish or those gained from the Osprey. Various guides and hunters have told me of shooting Ducks on the ponds and lakes of northern Maine and having Eagles swoop down and bear away the game before the hunters had time to get out in a canoe and retrieve it. Along the coast the Eagles prefer to get their living through the medium of the Ospreys as much as possible, and I have also on two occasions found Eagles feeding on dead sheep on the outer islands, sheep which had seemingly died of thirst or disease as they bore no evidence of violence, save where the already rotten flesh had been torn by the Eagles. The nests are nearly always with us placed in tall trees, usually those with dead tops, or wholly dead, and generally nearly inaccessible. The nests are always large bulky structures of sticks, the result of years of occupancy, and are lined with sods, seaweed and similar material. Two or three pure white, more or less stained eggs are laid, generally in late March with us, and they measure about 2.90 x 2.05. Though practically resident with us they wander over a much greater territory in fall and winter than they do in the nesting season. In Florida they are said to breed in December and January.

In the Auk for April 1906, p. 222, I find the following account of eggs of this species written by B. G. Willard. He states:—"On April 7, 1891, I took a set of two eggs from a Bald Eagle's nest in a tall dead pine (since fallen) in Lincoln County, Maine. On April 16, 1892, I took a set of three eggs from the same nest. Incubation had begun in the set of two and was about one third completed in the set of three.—The nest was lined with *green* pine boughs. When I found the nest

I went very close to the tree without seeing any bird, and it was not until I fired my gun over the nest that the female flew off. I did not see her again until I was half way up the tree, when both birds appeared on the scene, though at no time did they come very near me. The eggs of the first set measure 3.20×2.27 and 3.04×2.21 . Second set:— 3.02×2.31 , 3.03×2.20 , 2.95×2.19 ." It seems possible that the larger northern form *Haliwetetus leucocephalus alascanus* may ultimately be taken here in winter.

Subfamily FALCONINÆ. Falcons.

Genus FALCO Linnæus.

Subgenus HIEROFALCO Cuvier.

353. *Falco islandus* Brunn. White Gyrfalcon; Partridge Hawk; Greenland Gyrfalcon.

Plumage: "Prevailing color pure white; the under tail coverts always, the thighs usually unspotted; the remainder of the plumage ordinarily more or less marked with dusky or slaty; but the crown, hind neck, and entire lower parts nearly or quite immaculate in some old birds." (Brewster, Land & Game Birds of N. E. p. 478). Wing of male 14.00 to 15.00; wing of female 15.00 to 16.50; tarsus 2.35.

Geog. Dist.—Arctic regions, including Arctic America and Greenland, wandering south in winter to Labrador and northern Maine. (A. O. U. Check-List); once taken in Maine.

County Records.—Penobscot; a specimen shot in South Winn, about October 8, 1893, by a Mr. Wyman is in Mr. Brewster's collection, (Brewster, Auk. 12, p. 180).

This seems to be the only instance of this form straggling to the United States. Mr. Brewster states that though too dark-colored to be typical of the form it is nevertheless an unmistakable example of *F. islandus*. The exact status and relationship of the various Gyrfalcons is at present in a most unsatisfactory state.

That the arrangement and relationship adopted in the A. O. U. List is correct is very doubtful. My own personal preference and ideas are strongly otherwise. As Mr. Hagerup

states (Birds of Greenland, p. 24) "I believe the two forms (referring to light and dark birds) are related much in the same way as those of the Fulmarinæ, etc". Mr. Hagerup also states (Ibid.):—"As Holboll and Fencker repeatedly observed mated pairs, one of which was white (*F. islandicus*) and the other dark (*F. rusticolus*), and as Holboll also found light and dark colored young in the same nest, I conclude with these observers that there is but one species of Gyrfalcon found in Greenland" etc. The finding of both light and dark colored young in the same nest seems most conclusive. It is indeed quite possible that like Swainson's Hawk these birds may have both a light and dark phase of coloration.

In the far north they are said to nest on cliffs, making their nests of sticks and laying three to five eggs. The eggs are recorded as having a creamy white ground color, so thickly speckled and spotted with brilliant reddish as to often obscure the ground color. The eggs are also said to be covered with little wart like elevations. A set is stated to measure as follows:—2.32 x 1.83, 2.35 x 1.83, 2.38 x 1.84, 2.39 x 1.79, (Davie). In habits all the Gyrfalcons are very much alike, bold and dashing, feeding on Ptarmigan, Ducks, and similar game birds and waterfowl. They are only slightly migratory, moving only but little southward in winter.

354. *Falco rusticolus* Linn. Gray Gyrfalcon.

Plumage: "Lower tail coverts always more or less marked with dusky; top of head much streaked with white, often with white prevailing; tail crossed by alternating dark and white or whitish bars usually of about equal width and sharply contrasted; remainder of upper parts conspicuously barred or spotted with grayish white, or light buffy on a dark ground; under parts barred (in old birds) or striped (in young) with dusky on a whitish ground" (Brewster, Land and Game Birds N. E. p. 478). Measurements not different from preceding.

Geog. Dist.—Arctic regions, Greenland, Iceland and Arctic America.

County Records.—Cumberland; a specimen taken at Cape Elizabeth, October 13, 1877, is in the collection of Prof. J. Y. Stanton of Lewiston, (Brown, C. B. P. p. 21). Mr. Norton has recently re-examined this specimen and confirms its identification (J. M. O. S. 1907, p. 19).

This appears to be the only known New England example of this form. Mr. Boardman had at least two examples but *both were taken on Canadian soil*. When the real truth is known regarding these puzzling birds it seems very likely that only two forms will be recognized, *F. rusticolus* and *F. rusticolus obsoletus*. This latter indeed, admitting that its range is correctly delimited, seems the only form having a satisfactorily distinct range, and it seems extremely probable that the other recognized forms are mere plumage phases, due to individuality or age and to which the name *F. rusticolus* must apply. The food and nesting habits, eggs and other characters do not differ greatly from those of the White Gyrfalcon.

354a. *Falco rusticolus gyrfalco* (Linn.). Gyrfalcon.

Plumage: "Generally similar to *F. rusticolus*, but darker colored, especially above; the top of the head with dusky prevailing, often uniformly dusky; the lighter tail bands bluish gray (never conspicuously white), and usually narrower than the dusky interspaces, often interrupted and inconspicuous; remaining upper parts dusky, often nearly uniform, but usually more or less diversified with paler; lower parts with white prevailing, or at least equalling the dusky marking in extent." (Brewster, Land and Game Birds N. E. p. 479). Measurements like preceding.

Geog. Dist.—Northern Europe, Greenland, and Arctic America, from northern Labrador and Hudson Bay to Alaska; rarely in winter to Maine, Massachusetts and Rhode Island.

County Records.—Cumberland; one killed at North Deering December 11, 1906, (Norton, J. M. O. S. 1907, p. 18); one taken at Jacques Island, March 7, 1907, a female, (H. H. Brock). Piscataquis; one taken at Ktaadn Iron Works in December, 1876, is in the museum of Brown University, (Purdie, B. N. O. C. 4, p. 188, and Brewster, Land and Game Birds of N. E. p. 479).

Another specimen known to have been taken in Maine, but without locality given, is in the collection of Prof. A. L. Lane of Waterville. (J. M. O. S. 1899, p. 1).

In habits, nesting, eggs, etc., this species does not differ from the Iceland Gyrfalcon. They are said to usually nest on cliffs but sometimes in trees. The North Deering specimen recorded walked into a hen yard and killed a large rooster. The Ktaadn Iron Works specimen was caught in the arms of a man as it emerged from beneath a barn where it had pursued a fowl, so it will be seen that these birds are both bold and voracious.

354b. *Falco rusticolus obsoletus* (Gmel.). Black Gyrfalcon; Labrador Gyrfalcon.

Plumage: "Prevailing color dark plumbeous or plumbeous brown, sometimes practically uniform, save on the under tail coverts, which are said to be always spotted with whitish, but usually with more or less whitish markings on the lower parts, where, however, the darker color invariably exceeds the lighter in extent,—excepting on the throats of a few specimens. (Brewster, Land and Game Birds of N. E. p. 480). Measurements like preceding.

Geog. Dist.—Labrador; in winter rarely south to Maine, and New York.

County Records.—Cumberland; Mr. E. P. Carman of Bridgton has a specimen which was shot at Spurwink near Cape Elizabeth, about the middle of September, 1887, (specimen rather recently seen by O. W. K.). Knox; Mr. Rackliff took a specimen on the day before Thanksgiving, 1886, which was sent to F. B. Webster and is most certainly the same bird recorded by Brewster, (Auk. 4, p. 75) as taken near Rockland; Mr. Brewster has another which was taken at Eagle Island, about March 22, 1888, (Land and Game Birds of N. E. 2nd. ed., p. 480). Oxford; one shot in 1892 or 1893 and now in the collection of Harry Lane, (Nash); one recently shot at East Waterford, by Mr. Doughty is being mounted by J. Waldo Nash, (Adams, Three Kingdoms, March, 1898). Penobscot; a very dark individual taken at Alton, October 20, 1905, (Allen, Auk 1908, p. 234).

The nesting habits and food of this species are not different from the others. It seems to be the only one having a distinct habitat not markedly overlapped by other forms, while the other three recognized forms "mix into each others territory" more or less. They occur casually in Maine, and probably nearly every one secured is eventually recorded.

Subgenus RYNCHODON Nitzsch.

356. *Falco peregrinus anatum* (Bonap.). Duck Hawk; Peregrine; Great-footed Hawk; Wandering Falcon; Bullet Hawk.

Plumage of adults: above bluish slate; the tail white tipped and faintly barred with dark; primaries barred with ochraceous; breast creamy buff; remaining under parts cream buff, barred and spotted with black. Immature plumage: above fuscous, the feathers margined with ochraceous; black almost moustache like markings below the eye; tail above barred with grayish and below with rusty buff; under parts ochraceous buff, streaked, spotted or barred with black. Wing of male 11.00 to 13.00; wing of female 13.00 to 15.00; tarsus of male 1.75; tarsus of female 2.10.

Geog. Dist.—North America, south to Chili; breeding locally from California to Alaska and Labrador.

County Records.—Androscoggin; (Pike). Cumberland; very rare transient, (Brown, C. B. P. p. 21); one in fall of 1898, (Lord); one observed at Westbrook, March 14, 1901, (Norton, J. M. O. S. 1901, p. 27). Franklin; rare migrant, (Sweet). Hancock; rare, I feel sure it breeds, (Knight). Oxford; rare, breeds, (Nash). Penobscot; quite rare, it probably breeds in the northern part of the county in the mountainous portion, (Knight). Sagadahoc; common in October and occasionally seen the last of March and through April, (Spinney). Washington; not uncommon, breeds, (Boardman).

Along certain sections of the coast this species seems quite general in migration during October, while elsewhere and at other seasons it is decidedly rare. A few pair most certainly breed in the more mountainous portions of the State, arriving in April and leaving in October. They generally nest on cliffs, making a nest of sticks, rather shallow as a rule, but in some localities they have been recorded as nesting in cavities in the top of broken off trees or even in old Hawk's nests in trees. The same nest is reoccupied many seasons.

The eggs are creamy white in ground color, but this is generally wholly obscured by spots, blotches, and dots of reddish brown, chocolate and umber. Three to five, usually four are laid and these measure on the average 2.10 x 1.60.

This species or its near European relative was the species used in the falconry sports of old. They are brave, audacious and dashing, flying "like a bullet" after their prey which is seized, even at the very feet of man where the prey may have sought refuge. They feed on various game birds, small birds and poultry, preferring Ducks, Grouse and other game birds as a rule, but not disdaining rabbits and other small mammals.

Subgenus *ÆSALON* Kaup.

✓ 257. *Falco columbarius* Linn. Pigeon Hawk.

Plumage of adults; an interrupted rusty collar on neck; primaries and tail barred with white, tail white tipped; otherwise above slaty blue; below ochraceous buff, streaked with dark except on throat. Immature plumage: primaries and tail barred with buffy or ochraceous and a broken collar of

same on neck; tail light tipped; otherwise fuscous above; buff prevailing below, streaked with dark. Wing of female 8.00 to 8.50; wing of male 7.50 to 8.00; tarsus of male 1.35; tarsus of female 1.55.

Geog. Dist.—North America, breeding from the northern tier of states northward; winters from the southern tier of states to the West Indies and South America.

County Records.—Androscoggin; summer, (Johnson). Cumberland; not common, (Mead); common migrant near Portland, (Lord); one shot at Westbrook December 1, 1906, a male, (Norton, J. M. O. S. 1907, p. 9); a female shot at Scarboro, Feb. 22, 1907, (Norton, l. c.). Franklin; rare summer resident, a specimen was shot here in June, (Swain); rare migrant, (Sweet). Hancock; rare summer resident, breeds, (Knight). Kennebec; rare, (Gardiner Branch). Knox; migrant, (Rackliff). Oxford; rare summer resident, (Nash). Penobscot; though quite frequent in spring and fall a few also remain through the summer, especially in the northern county, (Knight). Piscataquis; not uncommon, (Homer). Sagadahoc; abundant in fall, a few in spring, (Spinney). Somerset; a few breed in the wilder sections, (Knight). Waldo; quite frequent in fall, I feel sure that a few breed, (Knight). Washington; not uncommon summer resident, (Boardman). York; (Adams).

The first migrants arrive about April fifth to tenth and the bulk slightly later on, while the last fall stragglers generally have left by October tenth, the bulk somewhat earlier. The records given by Mr. Norton indicate that occasional individuals may winter. The species is in greater numbers during the fall migration than at other seasons, and is then generally found throughout the State.

As a breeding bird it is confined to the Canadian fauna, and while the eggs have not been found in the State, young birds have been seen which were unable to fly, evidently just out of the nest, and during June the parents have been observed in a great state of excitement though the nests could not be located. I have had them both swoop down at me, uttering an angry "cac, cac, cac, cac, cac" varied by a shrill piercing "ki-e-e-e-e-e" and exhibit every indication of trying to protect a nest which could not be located.

According to the reports of persons who have found the nests elsewhere, they nest in holes in trees and stubs, occasionally on cliffs and sometimes in deserted Crow's nests or in nests in trees which are built by the birds themselves.

The eggs are said by Major Bendire to be three to five in number, short ovate to rounded ovate and elliptical ovate in shape, the ground color pale creamy white when visible, but usually hidden by the reddish brown suffusions and blotches and markings of burnt umber, brown, rufous, etc. The eggs are said to measure about 1.48 x 1.22.

The birds are tame and rather bold. They frequent rather open woods, both hardwood growth and spruce woods of the northern sections during the breeding season, but in fall are found more along the roadsides, in woods at the borders of fields and similarly.

During the migration I have sometimes seen flocks of one to two hundred migrating, seemingly following the line of a railroad or a highway, and I have also observed the same characteristic in the case of the Sharp-shinned Hawk. When so migrating the birds were in a loosely scattered band, some alighting others flying beyond and alighting, and the rear ones likewise flying ahead to alight again. At other times I have observed them well up, flying in a straggling band without alighting. They feed on small birds, seemingly by preference, though occasionally they also take squirrels, mice and even small chickens.

Subgenus TINNUNCULUS Vieillot.

360. *Falco sparverius* Linn. American Sparrow Hawk; Killy Hawk.

Plumage of adult male: head slaty blue with a rusty spot near the center of the crown; black marks in the region of the ear coverts; primaries white barred; wing coverts *slaty blue*; back and tail rufous, the former black barred and the latter black banded near end and white tipped; ochraceous buff below, spotted with black on belly and sides. Plumage of adult female: the wing coverts are rufous, barred with black; the under parts somewhat streaked with dark ochraceous; otherwise similar to male. Immature plumage: softer, less brilliant and more blended than that of the adults to which it otherwise very closely corresponds. Wing of male 6.50 to 8.00; wing of female 7.00 to 8.00; tarsus 1.40.

Geog. Dist.—North America east of the Rocky Mountains; breeding from Florida to Great Slave Lake and Hudson Bay; wintering from New Jersey to South America.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; seen at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 15); several seen at Caribou, (Allen, J. M. O. S. 1901, p. 10). Cumberland; rare, (Mead); have information of its breeding in Windham, (Norton); common in migration, an adult male at Yarmouth, Jan. 10, 1904, (Lord). Franklin; summer resident, (Richards). Hancock; summer resident, (Murch). Kennebec; seen in April, 1906, between Augusta and Winthrop, (Knight). Knox; migrant, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; quite common in migration some years, not seen others, the eggs have been taken near Bangor, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common spring and fall, (Spinney). Somerset; not common summer resident, (Morrell). Waldo; observed in spring, (Newell). Washington; not uncommon summer resident, (Boardman). York; (Adams).

The usual time of arrival in spring is about April twentieth, sometimes slightly earlier and in fall all are gone by October fifteenth. It has once been noted here on January tenth, which is exceptional. A few scattered pair breed in almost every county of the state, preferring to frequent the stub bordered shores of ponds and rivers, clearings in the woods and the telegraph poles along the highways on which they may frequently be seen perched. They like to perch on some conspicuous dead limb, telegraph pole or other spot from which they have a good view of the surrounding country.

The nest is always placed in a hole in a tree, stub or post, either the deserted cavity of a Woodpecker or some natural cavity being used. The four to six eggs are laid on the chips and rotten wood at the bottom. The eggs are pure white, sometimes only sparsely, but more often very abundantly and both finely or heavily and boldly dotted, spotted, blotched and marbled with brown, chestnut, ochraceous, rufous and red-dish.

The eggs vary exceedingly regarding distribution and fineness or coarseness of the markings, some being uniformly dotted over the entire surface and others only at one end, in such cases the markings being often larger and more blotchy.

Five eggs taken June 1, 1891, measure 1.38 x 1.10, 1.30 x 1.04, 1.39 x 1.10, 1.36 x 1.09, 1.35 x 1.10.

Both sexes share the labor of incubation, and when the female is on the nest the male is generally perched in a conspicuous place not far away. He is more or less attentive to his mate, bringing her food at times when she is incubating.

Their prey consists of small birds and mice, grasshoppers, crickets and other insects, only very occasionally small chickens and the young of poultry and game birds. I have often seen one of these birds leave its perch and fly to the surface of a field near by and there hover a foot or so from the ground, sometimes crying "killy, killy, killy, killy" at other times silent, generally dashing to the ground finally and arising with a mouse or grasshopper in its talons. They have a call note sounding like "ki-wee, ki-wee, ki-wee," repeated several times.

Subfamily PANDIONINÆ. Ospreys.

Genus PANDION Savigny.

364. *Pandion haliaetus carolinensis* (Gmel.). American Osprey; Fish Hawk.

Plumage of adults: more or less white toward rear of head and on neck; tail obscurely banded by dusky and generally white tipped; otherwise above fuscous; below white. The breast of the female is generally spotted with brownish. Immature plumage: similar, the feathers of back more or less margined with whitish. Wing 17.50 to 20.75; tarsus 2.00 to 2.50.

Geog. Dist.—North America; breeding from Florida to Hudson's Bay and Alaska; wintering from South Carolina to northern South America.

County Records.—Androscoggin; common, (Johnson). Aroostook; scattered in summer about the lakes and ponds, (Knight). Cumberland; common summer resident, (Mead). Franklin; rare summer resident, (Swain). Hancock; common summer resident along the coast, local and rare inland, (Knight). Kennebec; rare, (Royal). Knox; summer, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; local summer resident about the ponds and lakes from mid April to September, (Knight). Piscataquis; not uncommon, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common, probably summer resident, (Morrell); a few breed about the northern lakes, (Knight). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; (Adams).

The Fish Hawk is a general summer resident, occurring in quite good numbers for such a large bird, very generally along the coast and locally throughout the interior about various bodies of water. The first coast arrivals appear about April tenth, and in the interior slightly later or after the ice has left the lakes, and they remain until well along in September, or exceptionally until October fifteenth.

Inland they place a bulky nest of sticks, driftwood, and bark lined with grass and moss in some tall tree, nearly always inaccessible and sometimes dead, and generally so situated that a good view of the water can be obtained. Along the coast they nest in lower trees, generally spruces, and not infrequently on the ground on the point of an island, the nest always being very bulky. On one island, a small one of not over two acres in Penobscot Bay, I found two nests of the Osprey containing eggs, the nests being on the extreme opposite points of the island. Occasionally three or four nests may be found in trees within an area of a few hundred yards but usually however the birds each prefer a separate island, except on the very largest wooded islands along the Maine coast.

I have sometimes found them nesting on small ledges, barely above the high tide level, also on "spindles" in at least two instances. Usually two or three, and more rarely four eggs are laid. Four from a nest composed of sticks, sods, seaweed and rubbish, lined with a little grass, which was twenty-five feet up at the top of a spruce tree on Beech Island, were taken May 26, 1897. These eggs measure 2.43 x 1.74, 2.38 x 1.72 2.46 x 1.75, 2.51 x 1.74.

A nest situated on the point of an island in Penobscot Bay on the ground was composed of sticks, brush and rubbish lined with dry grass and a few feathers. This nest was seventy inches in diameter outside, and twenty feet in circumference at the bottom. The height outside was three feet and the depth of hollow inside three inches.

Two eggs taken June 19, 1896, were sterile and half incubated respectively and measure 2.55×1.68 , 2.49×1.69 . Three eggs advanced in incubation were taken from the same nest May 26, 1897, and these measure 2.53×1.82 , 2.47×1.74 , 2.51×1.79 .

When it comes to beauty the Osprey's eggs easily stand very near the head. They are usually of a white or buffy ground color, very heavily and abundantly marked with spots and blotches of wonderful variability. These spots are a great variety of shades of reddish vinaceous and reddish brown. The eggs from the same nest taken different years show a general resemblance to one another, but eggs from different nests vary wonderfully.

The birds are quite demonstrative, flying overhead, diving down toward the would be nest robber and keeping up a peculiar plaintive whistling "whew, whew, whew." They move their wings more than most of the other Hawks in flying, taking quite frequent strokes at times. When a fish is spied they close their wings close to their body and like an arrow down into the water they go with a splash, generally rising with the fish grasped *crosswise* in one or both talons. When a gun is fired near where one of the birds is flying over the water, even if the gun has not been fired towards the bird, it almost invariably extends its feet downward making several ineffectual clutches at the air and increasing the number of wing strokes. I think the birds remain mated for life, at any rate the same nest is occupied for many successive seasons.

The eggs are usually laid about the middle of May and the young are hatched in about twenty seven days. The young birds when partly fledged stand up in the nest and keep up a constant calling for food at the approach of the parents. They leave the nest in late July. Among the fish which are eaten are herring, polluck, flounders, sculpins, tomcods, eels, quivers sun fish, bass, perch, horned pout, pickerel, trout and small

salmon. It has been my experience however that the trout and salmon are but seldom taken by the birds, probably because they less often offer opportunity to be captured.

Suborder STRIGES Owls.

(The American Barn Owl recorded in Smith's list was not taken in Maine. There is no probability of the species ever being taken here and the species is not entitled to be given in the Hypothetical List even. I make mention of it here for the reason if I did not take cognizance of it some busybody would be sure to rake up the old record on the assumption that it had been overlooked).

Family BUBONIDÆ. Horned Owls, etc.

Key to the species of BUBONIDÆ.

- A. Wing over 10.00.
 - 1. With prominent tufts of feathers like horns or ears on head.
 - §. Wing over 13.50. Great Horned Owl.
 - §§. Wing under 13.50.
 - ? . Belly with cross bars, ears prominent. American Long-eared Owl.
 - ?? . Belly without cross bars, ears short, hard to distinguish in skins but easier to make out in birds in flesh. Short-eared Owl.
 - 2. Without horn like tufts or ears on head, or no such tufts evident.
 - §. Belly without cross bars, usually striped.
 - ? . Upper parts barred. Barred Owl.
 - ?? . Upper parts striped, not barred. Short-eared Owl.
 - §§. Belly with cross bars, (very exceptionally not barred in an immaculate individual of the Snowy Owl).
 - ? . Plumage white with bold black bars, or very exceptionally indeed immaculate white. Snowy Owl.
 - ?? . Plumage fuscous or grayish, finely mottled or barred with whitish. Great Gray Owl.
- B. Wing under 10.00.
 - 1. Ear tufts or horns conspicuous; toes sparsely or not feathered. Screech Owl.
 - 2. No ear tufts; toes heavily feathered.
 - §. Wing under 6.00. Saw-whet Owl.
 - §§. Wing over 6.00.
 - ? . Tail under 6.00. Richardson's Owl.
 - ?? . Tail over 6.00. American Hawk Owl.

Genus ASIO Brisson.

366. *Asio wilsonianus* (Less.). American Long-eared Owl.

Plumage: head with conspicuous ear tufts about an inch in length, black, bordered with white and buffy; "face" buffy with black border; tail with several cross bars of fuscous; upper parts dusky with a confused mottling of white or ochraceous buff; below white and ochraceous buff, streaked on breast and barred on sides and belly with fuscous. Wing 12.00 to 13.00; tarsus 1.20.

Geog. Dist.—North America; breeding from Nova Scotia and Manitoba to the Gulf States and southern California.

County Records.—Androscoggin; fairly common resident, (Johnson). Cumberland; not rare, (Mead); common, (Lord). Franklin; common resident, (Richards). Hancock; local resident, not common, (Knight). Kennebec; (reported in Hamlin's List). Knox; migrant, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; rare resident, oftener seen in fall, (Knight). Piscataquis; not uncommon, breeds, (Homer). Sagadahoc; common spring and fall, (Spinney). Waldo; in fall at least, (Knight). Washington; not uncommon resident, (Boardman).

This species is generally distributed as a resident throughout the State but I greatly doubt that it is really what may properly be called common anywhere. In the day time it is very tame, allowing a person to approach quite closely as attested by a series of photographs I once secured of a living bird. They generally roost in rather thickish trees during the day.

At night they fly with a slow noiseless rather halting motion as if carefully scanning the territory as they pass along. A squeak made by sucking with one's lips pressed tight against the back of hand will often bring the Owl at such times to hover suspended almost in one's very face, until a slight movement breaks the spell and away it goes slowly and deliberately.

In the fall I have often heard a flock of Chickadees engaged in "mobbing" some luckless Owl and on investigating have generally found that the present species or more rarely the Saw-whet Owl was the subject of their indignation meetings. The Owl would sit perched up motionless with wide open staring eyes, occasionally snapping its bill with a loud cracking



AMERICAN LONG-EARED OWL.

Photograph of Living Bird by Ora Willis Knight

sound when some Chickadee ventured too near to vent his indignation.

I have occasionally heard the old birds but more often the nearly fledged young utter a peculiar whining cry much like a very young puppy, and they also express their feelings by hissing and snapping their bills.

In southern California I have often found several of these birds roosting together in one live oak tree, and have found four or five nests in a small thicket of willows along a stream. Here in Maine they are not so social, and I have never seen more than one in a place, save for pairs and the young in the nesting season. The eggs are three to seven in number, pure white and somewhat glossy. The nests are made of sticks and twigs lined with cedar, hemlock or other bark and some feathers.

In the west they appear to occupy deserted Magpies nests or make nests of their own, while in the east they usually remake a Crow's nest. The eggs are very often in varying stages of incubation from fresh to nearly hatched, and this was the case both in California and the east in many cases. About May first is the time for eggs in Maine. A set of four measure 1.69 x 1.34, 1.66 x 1.32, 1.65 x 1.29, 1.65 x 1.32. They feed principally on mice and small mammals, very seldom on birds.

367. *Asio accipitrinus* (Pall.). Short-eared Owl; Marsh Owl.

Plumage: tail banded with buff and fuscous; above fuscous, margined with buff; ear tufts rudimentary; below whitish to buff, streaked with fuscous. Wing 12.00 to 13.00; tarsus 1.70.

Geog. Dist.—Cosmopolitan; found throughout North America at one season or another; breeds locally from latitude 39° and Virginia northward.

County Records.—Androscoggin; fairly common resident, (Johnson). Aroostook; taken in the county, (Knight). Cumberland; moderately common resident, (Brown, C. B. P. p. 20). Franklin; rare resident, (Richards). Hancock; resident, (Dorr). Knox; migrant, (Rackliff). Oxford; rare, (Nash). Penobscot; very rare resident, (Knight). Piscataquis; one taken

at Dover, November 1, 1901, (Ritchie). Sagadahoc; common spring and fall, (Spinney). Somerset; at least occasional, (Knight). Waldo; in fall at least, (Knight). Washington; not uncommon resident, (Boardman). York; (Butters).

The species is a rare and local resident occurring in rather widely scattered localities throughout the State. They prefer to frequent the grassy marshes and meadows of the coast and in the interior along the streams and about the ponds. They are generally flushed from almost under one's feet in the meadows and marshes and do not go far before alighting again in the marsh.

Four to twelve white or slightly creamy tinged eggs are laid and these are rather dull in lustre. The nest is of a few sticks and grasses on the ground on broken down masses of rushes and reeds and sedges or on a muskrat house or some similar place in a sedgy meadow or marsh. Five from Devil's Lake, North Dakota, taken May 31, 1895, measure 1.52 x 1.26, 1.55 x 1.24, 1.55 x 1.24, 1.51 x 1.23, 1.55 x 1.26.

The only noise I have ever heard the birds make is a snapping of the bill which is a way of expressing displeasure peculiar to all Owls. They eat mice and other small mammals, as well as occasionally a few birds.

Genus SYRNIUM Savigny.

368. *Syrnium varium* Barton. Barred Owl; American Wood Owl; Round-headed Owl; Hoot Owl; Black-eyed Owl.

Plumage: above grayish brown, each feather barred with whitish or buffy; tail barred with six to eight bars of pale brown or whitish; face gray with fuscous mottlings; below white or buffy, barred on the breast and streaked on the sides and belly with fuscous; eyes dark brownish black.

Geog. Dist.—Eastern United States, south to Florida, north to Nova Scotia and Quebec, west to Minnesota, Nebraska, Kansas and Texas; resident and breeding throughout almost its entire range.

County Records.—Androscoggin; fairly common resident, (Johnson). Aroostook; resident of the wooded sections of the county, (Knight). Cumberland; resident, rare in summer, (Brown, C. B. P. p. 20). Franklin; common resident, (Richards). Hancock; common resident, (Dorr). Kennebec; common, (Powers). Knox; winter, (Rackliff). Oxford; breeds

commonly, (Nash). Penobscot; generally distributed resident, commonest in fall, (Knight); Piscataquis; abundant, breeds, (Homer). Sagadahoc; common spring and fall, (Spinney). Somerset; not common resident, (Morrell). Waldo; rare resident, (Knight). Washington; abundant resident, (Boardman).

These are woodland birds and may be found in small groves occasionally but more often in extensive tracts of woods, especially in the large tracts of forest covering northern Maine. Here at night their querrying call "whoo-whoo-whoo-whoo" or "to-whit-tu-whoo" may be heard frequently repeated throughout the months of March, April and May, and less often at other seasons, but still heard throughout the year on calm still nights. Some of the shrill shrieks which are variously attributed to the banshee or the wail of an expiring soul uttered in the deep woods are attributable to these birds. They also utter sometimes a whining sound and violently snap their beaks when teased or angered or when their nest is in danger.

They nest in the larger natural cavities of trees along waterways or clearings, or very exceptionally take possession of an old Crow's or Hawk's nest. They lay from two to four, more often two or three white eggs. Two taken March 27, 1894, from a cavity in a dead elm fifteen feet up measure 1.98 x 1.76, 2.00 x 1.72. These eggs were laid on the rotten wood at the bottom of the hole. The same nesting place is occupied year after year.

The chief food is mice, squirrels, various small mammals, snakes, frogs, grasshoppers, and very rarely small birds, poultry or game birds. Once I saw a dead one brought into a taxidermist's shop which smelt very strongly of skunk, and the bird in question was unusually emaciated, so that it seems possible that driven by hunger it had at least made an attempt to kill a skunk.

Genus SCOTIAPTEX. Swainson.

370. *Scotiaptex nebulosa* (Forster). Great Gray Owl; Cinereous Owl.

Plumage: face gray with black bars; above fuscous with white mottlings; below white, streaked on breast and streaked and barred on belly and sides with fuscous. Wing 15.50 to 17.75.

Geog. Dist.—Arctic America, breeding far north; in winter straggling south to southern New England, New York, New Jersey, Ohio, Illinois, Idaho, and northern Montana.

County Records.—Androscoggin; (Pike). Cumberland; six specimens known additional to those in Smith's List, (Everett Smith); a few occasionally, (Lord). Franklin; very rare, (Swain). Hancock; rare, (Dorr). Kennebec; one at Augusta in December, 1887, (E. Smith). Knox: winter, (Rackliff). Oxford; rare visitant, (Nash). Penobscot; according to S. L. Crosby many were taken one winter in the early '90's, and I have seen one or two at Crosby's shop nearly every winter since, (Knight). Piscataquis; rare winter visitor, (Homer). Sagadahoc; one taken near Bath, this was some fifteen years ago, (Spinney). Waldo; one is in the collection of the Boston Society of Natural History, from Stockton Springs, (Allen, Auk 1908, p. 234). Washington; rare, winter only, (Boardman). York; one taken at Biddeford March 2, 1890, (E. Smith).

This species is ordinarily a rare winter bird, only three or four individuals being ordinarily taken at scattered localities in a winter, but occasionally there comes a year when the species occurs in comparatively large numbers, perhaps forty or fifty being taken such seasons. They appear to have been taken at varying times from early November until March second.

In the Fur Countries and other Arctic regions the species builds a nest of sticks, lined with leaves and feathers in some tree such as pine, spruce, poplar or other tree at a height of twenty to thirty feet from the ground. Two or three white eggs are laid. The nesting period appears to range so that eggs are found from as early as late April until late June according to locality. An egg is said to measure 2.16 x 1.71, (Davie). The birds frequent thick woods and feed on mice, small mammals and birds.

Genus CRYPTOGLAUX Richmond.

371. *Cryptoglaux tengmalmi richardsoni* (Bonap.). Richardson's Owl; American Sparrow Owl.

Plumage of adults: grayish brown above, spotted with white on head and back and with partial bars of same on tail; below white or whitish, streaked with grayish brown; the thickly feathered feet and legs barred with gray

brown. Immature plumage: cinnamon brown above and on breast, somewhat slightly white spotted; ochraceous buff on belly. Wing 6.50 to 7.50.

Geog. Dist.—Arctic America, breeding from Gulf of St. Lawrence and Manitoba northward; in winter south to northern tier of states.

County Records.—Androscoggin; fairly common winter visitant, (Johnson). Cumberland; rare, (Mead); one in winter of 1901, (Lord). Franklin; rare winter resident, (Swain). Hancock; rare, (Dorr). Kennebec; very rare, (Dill). Knox; rare in winter, (Rackliff). Lincoln; taken at Waldoborough, (Smith, F. & S. 20, p. 285). Oxford; rare, (Nash). Penobscot; a quite rare and irregular winter visitor, occasionally sporadic in some considerable numbers, (Knight). Piscataquis; rare winter visitor, (Homer). Sagadahoc; taken at Bath, (C. H. Greenleaf to E. Smith). Washington, not uncommon in winter, (Boardman).

This species occurs generally throughout the State in winter, an occasional specimen being likely to be seen almost anywhere between November first and March twenty-fifth, but some years they do not appear here. They are very dull and stupid in the daytime and can often be caught in the hand, if perched low enough, before they take alarm. The call note during the breeding season is described as a musical soft whistle.

In the Arctic regions they are said to build a nest in trees or nest in cavities, laying three or four eggs during the month of May. The eggs are pure white and are said to measure about 1.35 x 1.14 (Davie). The birds are said to feed on mice and probably take insects as well.

372. *Cryptoglaux acadica* (Gmel.). Acadian Owl; Saw-whet Owl.

Plumage of adults: above dark cinnamon, finely streaked on head, spotted on back and interruptedly barred on tail with white; below whitish, streaked with cinnamon brown; the feet and legs covered with buffy or whitish feathers. Immature plumage: above and on breast cinnamon brown, none or but little white; belly rusty buff. Wing 5.00 to 6.00.

Geog. Dist.—North America; breeding from Middle States northward, and in the Rocky Mountains south into Mexico.

County Records.—Androscoggin; rare resident, (Johnson). Aroostook; common at Fort Fairfield and Houlton, (Batchelder, B. N. O. C. 7, 150). Cumberland; common, (Mead). Franklin; common resident, (Richards).

Hancock; quite often seen, resident, (Knight). Kennebec; rare, (Gardiner Branch). Knox; resident, (Rackliff). Oxford; breeds, (Nash). Penobscot; most often in spring and fall but not rare in summer, breeds, (Knight). Piscataquis; common resident, breeds, (Homer). Sagadahoc; spring, fall and winter, (Spinney). Somerset; resident, (Morrell); local breeding bird in northern county, (Knight). Waldo; rare resident, (Knight). Washington; common resident, (Boardman). York; breeds, (Adams).

This, the smallest of our Owls, is practically resident locally throughout the State, being however the most generally observed in fall and winter. I have known of one well authenticated instance where persons in Bangor heard a tapping at their window one stormy winter evening and on opening the window one of these little Owls flew in.

During the breeding season they utter a peculiar call, much resembling the filing of a saw, uttered rapidly in a whistling tone. The birds invariably nest in some hole in a tree such as a natural cavity or deserted Woodpecker excavation, or nests have been built in an artificial cavity, made by boring a hole in the section of a trunk, plugging the ends, making an entrance in the side and nailing it to a tree. Three to eight pure white eggs are laid in mid April to early May, and the eggs seem sometimes to be laid at intervals of two or three days, judging by different stages of incubation or the difference in the sizes of the young birds. The eggs measure about 1.22 x 0.98. The food of the species is mice, shrews, other small mammals and insects.

Genus MEGASCOPS Kaup.

373. *Megascops asio* (Linn.). Screech Owl; Mottled Owl; Little Horned Owl; Red Owl.

Plumage of adults in red phase: above rufous, streaked with black; below white, feathers streaked with black and barred with rufous. Plumage of adults in gray phase: above brownish gray with black streaks and buffish spots; below white, streaked and barred with fine marks of black and rufous. Immature plumage: barred above as well as below with grayish or whitish and rufous. Tarsus feathered, toes only scantily or not at all feathered in all plumages. Provided also with conspicuous ear tufts about an inch long. Wing 6.00 to 7.00.

Geog. Dist.—Eastern North America, north to New Brunswick and Minnesota, south to Georgia, west to the Plains; resident where found; accidental in England.

County Dist.—Androscoggin; common resident, (Johnson). Aroostook; occasional at least, probably more frequent than data at hand would show, (Knight). Cumberland; rare, (Mead); common, (Lord). Franklin; rare resident, (Richards). Hancock; rare resident, (Dorr). Kennebec; very rare, (Gardiner Branch). Knox; migrant, (Rackliff). Oxford; breeds, (Nash). Penobscot; rare resident, (Knight). Piscataquis; rare, (Homer). Sagadahoc; one specimen in late fall, (Spinney). Somerset; resident, (Morrell). Waldo; (Spratt). Washington; very rare, (Boardman). York; breeds, (Adams).

Though generally distributed as a resident species in the State it seems at the best rather rare as a rule. The odd variation in plumage occurs among young in the same nest in cases where both parents are of the light or dark phase and the young of both phases in some cases. There seems no good ground for attributing this coloration to anything but individual variation. A majority of the birds I have seen in Maine were of the gray phase of plumage, though I have also seen a few of the red phase.

They generally nest in hollow trees, using either natural cavities or the deserted ones of Woodpeckers, seemingly preferring to frequent old orchards and the vicinity of dwellings, though also frequenting open hard woods.

They utter a peculiar quavering call at night, especially during the nesting season, varying this by hissings and snappings of the bill. They are especially voluble in the snapping and hissing line when annoyed by human beings or mobbed by small birds, which latter event is very prone to occur if they venture abroad or are discovered at roost in an unprotected spot in the daytime.

The incubating bird, both take part, usually refuses to leave the nest when the tree containing it is rapped, but will usually poke its head out the entrance to see what is going on.

The eggs are pure white and slightly glossy, being three to seven in number. Six taken at Oberlin, Kansas, March 21,

1893, measure 1.44 x 1.18, 1.46 x 1.17, 1.40 x 1.20, 1.40 x 1.15, 1.45 x 1.20, 1.40 x 1.18. The nest was in an old Flicker hole in an elm tree about twenty-five feet up. The eggs are laid on chips, leaves and other material which naturally accumulate. The food consists of mice, small mammals, cicadas, grasshoppers, crickets, small birds and most rarely indeed poultry.

Genus BUBO Dumeril.

375. *Bubo virginianus* (Gmel.). Great Horned Owl; Hoot Owl; Cat Owl.

Plumage of adults: face ochraceous buff; ear tufts nearly two inches long, black with ochraceous or buff streaks; above mixed and mottled with ochraceous buff, grayish and blackish; throat with white spot or patch in center; below ochraceous buff, barred with black. Immature plumage: buffy barred with dusky or grayish. Wing 14.50 to 16.00.

Geog. Dist.—Eastern North America from Labrador to Costa Rica and west to the Mississippi Valley; resident throughout range.

County Records.—Androscoggin; fairly common resident, (Johnson). Aroostook; fairly general resident of the wooded portions of the county, (Knight). Cumberland; common resident, (Mead). Franklin; common resident, (Swain). Hancock; generally distributed resident of the county, (Knight). Kennebec; rare, (Gardiner Branch). Knox; resident, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; generally occurring resident of the wooded sections, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; common, nests, (Spinney). Somerset; not common resident, (Morrell). Waldo; quite rare resident, (Knight). Washington; common resident, (Boardman). York; breeds, (Adams).

Though generally distributed throughout State as a resident species there does not seem to be any good reason for calling the species common. The actual number of individuals occurring is not great, but such large, conspicuous, noisy birds are readily observed, often shot and brought to taxidermists for mounting so that the impression easily arises that they are really more numerous than is the real truth of the case.

The specimens of Arctic Horned Owl recorded in List of Birds of Maine, page 69, seem better treated as extremely pale or faded individuals of the typical Horned Owl. The Horned

Owls are practically non-migratory and it is indeed hard to conceive what would bring the Arctic species to a place so far beyond its normal range. I have examined many Horned Owls in the taxidermists' shops during the past nine years and found that they exhibit a great variation in plumage as regards lightness and darkness. Specimens exposed to strong light still further bleach out and lighten in color, and judging by the conditions surrounding the specimen in the Portland Society collections, a somewhat pale individual has become still paler by exposure to light for years.

Mr. Boardman's bird, a New Brunswick specimen barely mentioned in the List, was also exposed for years under conditions which would still further lighten its plumage. Mr. Nash's bird I have not seen, but believe it not greatly different from pale individuals observed elsewhere which were brought to the taxidermist shops in flesh at all seasons, so that all in all it seems best to now treat the extreme variations, both light and dark as individual extremes in plumage, all referable as they occur in Maine to the type, *Bubo virginianus*.

The specimen of Dusky Horned Owl recorded by Mr. Norton is not much darker in coloration than many individuals seen elsewhere. It is indeed possible that all our Maine birds are nearer the northern form and may be better regarded as all being referable to *B. v. saturatus*.

The species is typical of the deeper more lonely woods of Maine. Here at night its querying voice may be heard calling in a deep tone "hoo-hoo-hoo, who, who, woo, who, who." When their nest is climbed to during the breeding season or when a captive bird is annoyed they snap and crack their bills and spit and hiss in a most ferocious manner. A captive bird will throw itself partly on its back and with extended talons offer a most cordial embrace to whatever dares to touch it. They are usually night flyers, but occasionally one is discovered and mobbed by the Crows in daytime until driven to seek safety in flight. The flight is soft quick and noiseless.

Like all the other Owls the eyes are capable of being protected from extreme light by the birds voluntarily drawing down over them a thin nictitating membrane. All the species of our Owls also frequently disgorge pellets which may be found under their roosting places and which consist almost entirely of the bones, feathers, hair and other harder or more indigestible portions of their prey.

They are rather destructive in habits, feeding on mice, squirrels, rabbits, game birds, other small birds and poultry when obtainable which is rarely on account of its being generally housed at night when the Owls are most active.

A most interesting experience which befell me a few winters ago will well illustrate the methods of the Great Horned Owl, and though perhaps the case in hand may have been the work of one of the other large Owls instead, it has often been done by the Great Horned Owl in other instances and as a pair of these were in the vicinity I am inclined to think that it was the work of one of them.

I was going along through the woods when I came on a rabbit track which I started to follow in hopes of getting a shot. After proceeding a little way the tracks indicated that the rabbit had taken fright and quickened its pace until ultimately it was going its best, taking huge leaps without any seeming cause. Shortly the track ended, there was a little blood on the snow, the clear imprint of two wing tips and the rabbit was gone, carried away by an Owl.

A large proportion of the Horned Owls received by taxidermists which I have examined smell at least faintly, often strongly, of skunk so it is fair to assume that these too are preyed upon. There seem to be well authenticated cases where an Owl has caught a weasel to its own sorrow, the Owl killing the weasel and the weasel killing the Owl.

In late February or early March, the nesting season begins. Usually the unoccupied nest of a Hawk or Crow is taken possession of without any great remodelling, but very rarely

some large hollow stub is occupied. Two to four, usually three, pure white eggs are laid. A set taken March 11, 1894, measure 2.08 x 1.79, 2.17 x 1.79.

Genus NYCTEA Stephens.

376. *Nyctea nyctea* (Linn.). Snowy Owl.

Plumage of adult male: I once saw one absolutely immaculate white, and specimens which are white with only a few dusky patches are more often seen, though rare; normally the white is more or less broken up by bars of dark grayish brown or fuscous both above and below. Plumage of adult female and immature birds: barred with heavier, darker bars which are often very numerous and at any rate always stronger and more numerous than in males approaching the adult stage. Wing 17.00 to 19.00.

Geog. Dist.—Arctic regions, breeding on the American side north of the United States; in winter found south to the Middle States and straggling even to South Carolina, California, Texas and Bermuda.

County Records.—Androscoggin; rare winter visitor, (Johnson). Aroostook; winter visitor, (Knight). Cumberland; rare, (Mead); one in 1898 and one in 1901, (Lord). Franklin; rare winter visitor, (Swain). Hancock; usually rare winter visitor, (Knight). Kennebec; very rare, (Powers). Knox; winter, (Rackliff). Oxford; very rare, (Nash). Penobscot; generally rare in winter, occasionally brought to the taxidermists in considerable numbers, (Knight). Piscataquis; rare winter visitor, (Homer). Sagadahoc; irregularly common winter visitor, (Spinney). Somerset; rare winter visitor, (Knight). Waldo; rare winter visitor, occasionally seen from the county in the local taxidermists, (Knight). Washington; uncertain, some winters common, (Boardman). York; (Adams).

In the winter of 1901-1902 there seemed to be a rather unusual flight of these birds, they were reported all over the State as well as in other states to the westward. It seems very likely judging from collected records that fully 125 birds were sent to the various taxidermists of the State between early November and March. In 1905-6 they were again generally reported and it seems likely that fully 200 were killed in Maine and in like proportion in other states adjoining.

I have heard of Snowy Owls being taken here as early as October 15 but November and December and the early part of January are the periods of their most frequent occurrence,

while by late January or early February they are usually all gone.

They are said to nest on the ground in Arctic regions, the nest being a mere hollow lined with a little grass situated on a hummock in the mossy tundras. Three to ten pure white eggs are said to be laid in late May or June and the average measurement is said to be 2.24×1.77 .

A large number of stomachs of birds taken in Maine were examined by me and all were practically empty, containing a few fragments of moss and lichens except in one case where I was able to straighten out and identify eight or nine feathers which were most certainly the feathers from the neck of a Brown Leghorn Hen. There is no doubt but that this species will feed on almost any of the smaller mammals, game birds, poultry and similar available material, it seems quite probable that a scarcity of food is responsible for their appearance in Maine and the other states in numbers.

Genus *SURNIA* Dumeril.

377a. *Surnia ulula caparoch* (Mull.). American Hawk Owl; Day Owl.

Plumage: above dark grayish brown, spotted on head and hind neck and barred on back and tertials with white; tail with interrupted whitish bars; below more or less white, streaked on sides of neck and upper breast and barred on lower breast and belly with fuscous. Wing 8.75 to 9.30. Outer tail feathers much shorter than inner ones.

Geog. Dist.—Arctic America, breeding from Newfoundland northward; in winter south to the more northern states and occasionally to Pennsylvania.

County Records.—Androscoggin; rare winter visitor, (Johnson). Aroostook; rare winter visitor, (Knight). Cumberland; rare, (Mead). Franklin; rare, (Richards); seen at North Jay, November 29, 1905, (Swain). Hancock; rare, (Dorr). Kennebec; very rare, (Powers). Knox; migrant, (Rackliff). Oxford; rare, (Nash). Penobscot; quite common some seasons in late fall and winter, other years very rare, (Knight). Piscataquis; some winters common, (Homer). Washington; some winters common, (Boardman).

A general but usually rare winter visitor which some seasons occurs in comparatively large numbers, as many as forty being

taken throughout the State. Earliest date of appearance is October 25, but usually they are not here until November, and the last ones are gone by March 10.

They seem to fly and hunt more by day than by night with us and their manner of flight, their general appearance when perching and other characters are quite hawklike. They nest in various evergreen trees, making a nest of sticks, lined with moss or sometimes lay their eggs in natural cavities in trees. Three to seven pure white eggs are laid in late April or May and the eggs are said to measure about 1.50 x 1.25. The food of the species consists of mice, small mammals and occasionally a bird or so.

Order COCCYGES. Cuckoos, etc.

Suborder CUCULI. Cuckoos, etc.

Family CUCULIDÆ. Cuckoos, Anis, etc.

Subfamily COCCYGINÆ. American Cuckoos.

Genus COCCYZUS Vieillot.

Key to the species of COCCYZUS.

- A. Basal half or more of lower mandible yellow; webs of primaries rufous on inner edge or more; outer tail feathers black, white tipped. Yellow-billed Cuckoo.
- B. No yellow on bill; tail feathers grayish brown, only slightly white tipped and with indistinct subterminal dusky bar; primaries without rufous. Black-billed Cuckoo.

✓ 387. *Coccyzus americanus* (Linn.). Yellow-billed Cuckoo; Rain Crow; Rain Dove; Chow Chow; Egg Sucker; Milk Sourer.

Plumage of adults: brownish gray above with a perceptible greenish gloss; at least inner webs of wing feathers rufous, the outer rufous tinged toward base; all but two inner tail feathers black, broadly white tipped; below whitish; bill with at least basal half of lower mandible yellow, the upper mandible black. Immature plumage: differs in the tail feathers being

more grayish dusky, tipped broadly with white, otherwise as in adult. Wing 5.65; culmen 0.96; tail 6.20.

Geog. Dist.—Eastern temperate North America, breeding from Florida to New Brunswick, and west to the Plains; winters in Central and South America south to Costa Rica and in the West Indies.

County Records.—Androscoggin; rare summer resident, (Stanton). Cumberland; rare summer resident, (Brown, C. B. P. p. 20). Hancock; one taken at Bar Harbor by E. Gordon, (E. Smith). Oxford; visitant, (Nash). Washington; accidental, (Boardman).

This species is a very rare summer resident of the southwestern part of the State and elsewhere occurs as a mere straggler. They arrive about May 18, and as nearly as can be judged are gone by August. The call is a spasmodic "kuk-kuk-kuk-cook" or a "kow-kow-kow-kow" uttered with varying numbers of repetitions.

They usually make their nests in thickets of alders, willows, brier patches and low dense bushy thickets along streams or along roadsides, generally not more than five or six but sometimes even ten or twelve feet from the ground.

The nest is a platform of sticks, lined with catkins and dry partially skeletonized leaves. The eggs are three to five in number, pale greenish blue in color, averaging both larger and lighter colored than eggs of the Black-billed species. A nest sent me from Massachusetts contains three eggs and was taken at Bradford, June 9, 1895. This nest was built on a foundation of a few twigs and lined with catkins of *Salix discolor*, *Salix bebbiana* and the dry skeletonized leaves of oak, maple and linden. This nest was about three inches deep outside, seven inches across the top, and nearly flat, the hollow for the eggs being not more than one fourth inch. The eggs measured 1.20 x 0.86, 1.25 x 0.86, 1.25 x 0.89.

Their chief food in spring and summer is caterpillars and they eat hundreds of such things as the tent caterpillar, tussock moth caterpillar, mourning cloak butterfly larvæ and similar species, also beetles, moths grasshoppers, crickets and many of the softer fruits such as raspberry, blackberry, etc.

The eggs are sometimes found in varying stages of incubation from fresh up to those ready to hatch, indicating that at times several days elapse between the laying of each egg, but at other times an egg is laid every other day. There have been instances reported of finding their eggs in other birds nests but these are very rare and exceptional cases. Only one brood is reared in the northern portion of its range though in the southern portion observers say that sometimes two broods are reared.

388. *Coccyzus erythrophthalmus* (Wils.). Black-billed Cuckoo; Rain Crow; Rain Dove; Chow Chow; Egg Sucker; Milk Sourer.

Plumage of adults: above grayish brown, slightly glossed with greenish; the wings and tail slightly white tipped: below white; bill wholly black. Immature plumage: differs in being duller brown above, more grayish on tail and more rusty on quills of wing. Wing 5.00 to 5.50; culmen 0.93; tail 6.24.

Geog. Dist.—Eastern North America, west to Rocky Mountains, north to Labrador and eastern Assiniboia; winters in the West Indies, Central and northern South America.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; summer resident throughout the county, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, (Dorr). Kennebec; common summer resident, (Royal). Knox; summer, (Rackliff). Oxford; breeds common, (Nash). Penobscot; rather common summer resident locally, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrill). Waldo; common summer resident, (Knight). Washington; common, (Boardman). York; abundant breeder, (Adams).

The Black-billed Cuckoo is generally found throughout the State and may be expected to arrive in spring as early even as May 18 though ordinarily not till about the 22, and from then they remain until the first of September or exceptionally until September 14. Soon after their arrival their song "cow-cow-cow-cow-cow-cow" is heard in the thickets and brier patches, or occasionally the call is varied by a "coo-coo-coo-coo" or very rarely by "buck-a-rock, buck-a-rock."

Generally these unobtrusive dull colored birds slip softly through the foliage without being observed by many, but their song or call is good evidence that they are around. The song is less loud and harsh and of different intonation and time from that of the Yellow-bill. The habits are very similar.

The nest of the present species is built in low bushes in thicket, brier patches, alders and willows along the streams, roadside thickets and bushes in orchards and gardens. They eat almost every kind of moth, butterfly and the larvae thereof, beetles, grasshoppers, crickets, and occasionally various berries and soft fruits. I have known of their eating numbers of potato bug larvae.

With us the eggs may be found during June and July, the period of laying varying with the season and individual.

The eggs are laid at intervals of two or three days, or sometimes at greater intervals, so that well grown young are sometimes found with unhatched eggs which are afterward hatched. A typical nest was found ten feet from the ground in an alder bush in a dense thicket along the Stillwater River at Orono, June 15, 1894. When found there were no eggs in the nest and two days later one egg appeared, three days after the first egg was laid another was laid, and no other eggs appeared within the next six days so the nest and set were collected. These eggs were rather deep greenish blue and measure 1.11 x 0.81, 1.05 x 0.76. The foundation of the nest was twigs of alder and willow, and the eggs were warmly bedded in a downy mass of catkins of *Salix bebbiana* and a few catkins of *Salix discolor*. This nest was four inches in height outside and five inches across. It was nearly flat on top the hollow being not quite half an inch.

Both birds remained in the vicinity when the nest was approached, wings drooping and tails expanded, calling "cow-cow-cow-cow" with considerable anger. Both birds aided in building the nest and took turns at sitting after the first egg was laid. Other nests I have seen invariably had the platform made of

twigs and were lined with various soft material such as catkins. Gnaphalium, soft skeletonized leaves and other soft vegetable fiber.

Occasionally there have been reports of the eggs being found in the nests of other birds such as Yellow Warbler, Chipping Sparrow, Wood Pewee, etc., but such cases are rather exceptional, at least in Maine. Only one brood is reared here. The number of eggs found in a nest has been stated as varying from two to seven, but two or three seems to be most often the number I have met with in Maine. The species calls very much just before an approaching shower or storm, which explains the reason for its being called Rain Crow and Milk Sourer.

Suborder ALCYONES. Kingfishers.

Family ALCEDINIDÆ. Kingfishers.

Genus CERYLE Boie.

Subgenus STREPTOCERYLE Bonaparte.

390. *Ceryle alcyon* (Linn.). Belted Kingfisher; Lazy Bird.

Plumage of adult male: above bluish gray with more or less white spots and white tips to wing feathers and white inner webs of primaries, and the tail spotted and with bar like patches of white; a continuous bluish gray band across the breast, sides same color; otherwise below white, the white of throat extending around neck nearly to its back. Plumage of adult female: differs from male in being rufous on sides and with a partially completed band of same on belly. Feathers of crown forming an erectile crest. Wing 6.20; culmen 2.10.

Geog. Dist.—North America, breeding from Florida to Labrador, Hudson Bay, Behring Sea and Arctic Ocean; wintering from Oregon, Washington and southern New England to Panama and the West Indies.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; fairly common summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Lee and McLain). Hancock; fairly common summer resident, breeds along the coast among the islands, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; breeds commonly along the Penobscot River and elsewhere throughout the County, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset;

common summer resident, (Morrell); saw one on river at Pittsfield, Dec. 27, 1905, (Johnson). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common on Saco River, (Adams).

The species occurs throughout the State along waterways and about the lakes and ponds where there are suitable nesting accommodations. Along the coast they arrive slightly earlier than about the inland waterways, appearing about April 15 along the coast and near Bangor from April 20 to May 3 and about the ponds in early May after the ice has left. Nearly all leave by late September but exceptionally they may remain until even as late as December 27 as noted by H. H. Johnson. Who has not heard the cheerful rattling "whi-r-r-chi-r-chi-r-r-chir-r-r-r-r-r-r-r-r-r" with which the coming of the "Halcyon Days" is announced.

Who has not seen one of these birds leave its perch along the shore, fly along near the water with quick wing strokes and arise to another perch on an upended log, rock, stub or branch near the shore, announcing its intentions in its rattling way. When a fish is seen it is secured by a quick plunge and brought up crosswise in the bill until it can be turned and swallowed head first.

They feed on small chubs, minnows, and various small fish of almost every species found in our waters, grasshoppers, also crickets, butterflies and moths which latter two I have seen the birds take while on the wing, chasing them until they were caught. About fish hatcheries they have been reported as a menace to the young fry and this seems very probable.

The nest is at the end of a burrow excavated in the face of a steep bank usually near the water, but sometimes a long distance from any water. The burrow varies in length from three to eleven feet, extending back horizontally into the bank and at the end widening into a circular chamber. Here the eggs are laid on a bed of sand and occasionally a few fish bones.

A nest found in a steep bank some way from the water at Hermon, June 1, 1902, was in a burrow six feet from the top

and fifteen feet from the bottom of the bank. The burrow was four and a half feet in length. The seven nearly fresh eggs were pure white and measure 1.35 x 1.02, 1.37 x 1.02, 1.35 x 1.01, 1.39 x 1.05, 1.33 x 1.01, 1.33 x 1.02, 1.34 x 1.02. The full complement of eggs varies from four to eleven, usually six or seven, and these are laid from as early as May 15 to well along in June. Both birds aid in excavating and take turns in incubating. Only one brood is reared.

The birds eject the undigested bones, scales and similar harder portions of their food, often in and about the nest, and the young birds do likewise to some extent, so that the nest is built up somewhat as the young grow. The young are on the wing by the middle of July in many cases.

Order PICI. Woodpeckers, Wrynecks, etc.

Family PICIDÆ. Woodpeckers.

Key to the species of PICIDÆ.

- A. Head or nape or both with red bands or streaks or wholly red.
 - 1. Whole top of head not red, but a red crest on back of head or a red patch or band on or at sides of nape.
 - §. Under parts with black spots and streaks or wholly black.
 - ? Wing over 8.00; under parts wholly black. Northern Pileated Woodpecker (female).
 - ?? Wing under 8.00; under parts spotted or streaked with black; rump white. Flicker.
 - §§. Under parts white not marked with black.
 - a¹. Outer tail feathers white. Hairy Woodpecker (male).
 - a². Outer tail feathers black barred. Downy Woodpecker (male).
 - 2. Top of head wholly red.
 - §. Throat red.
 - ? Belly yellowish; primaries white spotted. Yellow-bellied Sapsucker (male).
 - ?? Belly white; primaries not spotted, black. Red-headed Woodpecker (male).
 - §§. Throat white.

- ?. Lower parts black, unstreaked. Northern Pileated Woodpecker (male).
- ?. Belly yellowish, sides streaked. Yellow-bellied Sapsucker (female).
- B. Head and nape without any red.
 - 1. Below white, not spotted or streaked.
 - §. Outer tail feathers pure white. Hairy Woodpecker (female).
 - §§. Outer tail feathers black barred. Downy Woodpecker (female).
 - 2. Spotted or otherwise marked below with black.
 - §. Back black, toes three. Arctic three-toed Woodpecker.
 - §§. Back black and white; toes three or four.
 - ?. Toes three; crown yellow or spotted with white; outer tail feathers white. American three-toed Woodpecker.
 - ?. Toes four; outer tail feathers not pure white.
 - a¹. Rump white; outer tail feathers black, only narrowly margined with white. Red-headed Woodpecker (female).
 - a². Outer tail feathers with broken white bars. Yellow-bellied Sapsucker (female).

Genus DRYOBATES Boie.

393. *Dryobates villosus* (Linn.). Hairy Woodpecker; Big Sapsucker; Big Guinea Woodpecker.

Plumage of adult male: nape with scarlet band; above black except for white in middle of back and white spots on wing and their coverts; outer tail feathers pure white; stripe above and below eye and under parts white. Plumage of adult female: differs only in lacking the scarlet nape band. Wing 4.50 to 5.00; culmen 1.20.

Geog. Dist.—Resident in northern and middle United States from the Atlantic to the Great Plains.

County Records.—Androscoggin; fairly common resident, (Johnson). Aroostook; fairly common resident, (Knight). Cumberland; common resident, (Mead). Franklin; common resident, (Lee and McLain). Hancock; resident, (Murch). Kennebec; common resident, (Gardiner Branch). Knox; resident, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; breeds quite commonly, commoner in winter when it may be observed almost daily in the City of Bangor, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; common, nests, (Spinney). Somerset; common resident, (Merrell). Waldo; common resident, (Knight). Washington; abundant, (Boardman). York; quite common, (Adams).

The species is generally distributed and resident throughout the State, frequenting the wooded shores of ponds and streams and the stub filled clearings of the less frequented sections. In

winter they appear in the orchards and trees of the towns and cities, doing a good work in exterminating the various injurious insects and their eggs and larvæ.

At all seasons their food is practically of an insect nature and they do especially good work in exterminating the species which bore in and work destruction to our various trees. They eat almost anything in the insect line which they find but grubs and beetles are prime favorites, and the species has also been reported as eating the larvæ and adults of potato beetles.

When feeding they often keep up a peculiar quick chirping call much like "ki-yeep, ki-yeep-ki-yeep." This is occasionally varied by a resounding tattoo delivered with the bill on the hard resonant wood, and this is more often heard in the breeding season. The young birds in the nest keep up a constant squeaking call for food.

The nest is always situated in a hole excavated in a tree, sometimes in the rotten wood of a dead stub, but more often according to my experience in a limb, the outer portion of which is living for the most part, but the heart and often one side dead and still very hard, and I have known them to excavate a hole rarely in a tree wholly sound and living. The height of the hole is from ten to forty feet from the ground. It is generally made on the sheltered side of the tree, goes in about two inches and then straight down seven to ten inches. The size of the entrance is generally under two inches, being seemingly too small to admit the bird. Three to seven pure white glossy eggs are laid. Usually three or four constitute the set and only one brood is reared in a season.

A typical nest was found at West Oldtown, Maine, in late April at which time the birds had progressed quite well with the excavation of it. The female bird could be heard digging away in the hole and the male was clinging to the entrance. Every little while the female appeared with a mouthful of chips which were transferred to the male and with them he flew away, returning shortly without them. After a while the

female came out and the male entered to excavate. He too passed the chips out from time to time and the female made an attempt to take them, but probably owing to her smaller mouth capacity more or less were spilled at the foot of the tree. As the male was about to appear with a load of chips he usually uttered a muffled "skip."

On May 28, 1894, I collected the eggs laid in this nest which were then about seven days incubated. These eggs measure 0.92×0.74 , 0.93×0.71 , 0.94×0.71 , and were pure glossy white. The nest was in a hole in an ash stub fourteen feet up and the hole was seven inches deep. This was in a swampy tract near the shore of Pushaw Stream.

As I rapped on the stub the male flew out and "yipped" until the female appeared. He seemed to be discoursing excitedly to her for both in turn lit near the nest and cautiously peered into the hole. Finally the female entered and reappeared in a puzzled sort of a way, re-entering to remain while the male flew off. I rapped on the stub again and the actions of the birds were repeated. They seemed to think the queer noise was in some way due to a giant beetle or grub working in the woods, but finally one of them saw me and the mystery being explained they disappeared, not to return until I climbed to the nest.

394c. *Dryobates pubescens medianus* (Swains.). Downy Woodpecker; Little Sapsucker; Little Guinea Woodpecker.

Plumage of adult male: nape with scarlet band; above black except for white in middle of back, white spots on wings and their coverts and white on outer tail feathers which latter are black barred; stripe above and below eye and under parts white. Plumage of adult female: scarlet nape band lacking, otherwise similar. Wing 3.50 to 4.00; culmen 0.70.

Geog. Dist.—Middle and northern parts of the Eastern United States north to Labrador; resident throughout its range.

County Records.—Androscoggin; common resident, (Johnson). Aroostook; common resident, (Knight). Cumberland; common resident, (Mead). Franklin; common resident, (Swain). Hancock; common resident, nests commonly on the wooded islands of the coast, (Knight). Kennebec; abund-

ant resident, (Gardiner Branch). Knox; resident, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; resident, common, next to the Flicker our commonest Woodpecker, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; common fall and spring, (Spinney). Somerset; common resident, (Morrell). Waldo; common resident, (Knight). Washington; abundant, (Boardman). York; quite common, (Adams).

A common and generally distributed resident species, being the little Woodpecker most often seen, and unlike the Hairy Woodpecker this species rather prefers to nest in an orchard or elsewhere near to human habitations although also found along the rivers and lakes and in the swampy tracts so full of stubs.

The nest is always placed in a hole in some tree or stub, being excavated by the birds themselves. Dead limbs of apple trees, dead limbs or stubs of other trees and similar situations are the nesting sites, the hole being usually ten or twelve feet from the ground. Three to six, generally four or five eggs are laid; usually about the last of May.

On May 27, 1896, a nest was found fifteen feet up in a dead, rotten maple stub overhanging the Stillwater River at Orono. The diameter of the entrance was an inch, the diameter of the vertical shaft two and a half inches and the depth of the hole six inches. The eggs were laid on a bed of fine chips at the bottom. These eggs measure 0.78×0.57 , 0.81×0.61 , 0.80×0.60 , 0.83×0.61 , 0.81×0.60 . The eggs are always pure glossy white, unspotted. This same stub had had a nest of the species for several previous years, a new hole being excavated each season.

Their call to each other is a jerky "yip-yip-yip" uttered in a slightly squeaky tone, and they also "drum," on the resonant wood, making a quicker less loud "tattoo" than the Hairy Woodpecker.

Their food is almost entirely of an insect nature and practically identical with that of the Hairy Woodpecker, though I have fancied that in winter they partook more exclusively of eggs of insects and know for a fact that they eat large quantities

of eggs of the tussock moth (*Orgyia sp.*). They are of course among our most beneficial birds.

A habit common to both the Downy and Hairy Woodpecker is to excavate in a rotten limb a temporary place of refuge which they use to roost in during the winter, and in Bangor I have observed individuals making such holes in December which they used to roost in during the winter and deserted at the approach of spring.

Genus *PICOIDES* Lacepede.

400. *Picoides arcticus* (Swains.). Arctic Three-toed Woodpecker; Black-backed Three-toed Woodpecker.

Plumage of adult male: bright orange patch in middle of crown; wing feathers spotted with white; outer tail feathers white save at base; white line from nostril under eye; sides barred with black; otherwise above black and below white. Plumage of adult female: orange crown patch lacking, otherwise not different. Wing 5.00; culmen 1.45. Toes only three.

Geog. Dist.—Northern North America, breeding from northern Maine, Hamilton County, N. Y., and northern Minnesota northward through the timbered country to the Arctic Regions; in winter ranging only slightly southward.

County Records.—Androscoggin; rare winter visitor, (Johnson). Aroostook; rare resident of the wooded sections, (Knight). Cumberland; rare winter visitant, (Mead). Franklin; rare, (Richards). Hancock; very rare resident, oftener seen in winter, (Knight). Kennebec; very rare, (Powers). Knox; migrant, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; rare resident of the wilderness, not uncommon in late fall and winter, (Knight). Piscataquis; common in winter, (Homer). Somerset; one specimen taken February 9, 1895, (Morrell); the most common Woodpecker in the interior, a nest found on Boundary Mountain, June 9, 1897, with young and another with four eggs near Moose River, May 23, 1885, (Carpenter, Cf. Morrell, Me. Sp. November, 1898, p. 20). Waldo; rare, (Spratt). Washington; not uncommon in winter; rare summer resident, (Boardman).

In the extensive woods of northern and western Maine this species is resident, and under the proper conditions may even be locally seen in considerable numbers, though usually rare. In winter it ranges more into civilized communities though then rather rare, but likely to be seen almost anywhere throughout the State.

When a forest fire has destroyed a considerable tract of woods or when an equally large tract has been drowned out by water it is only a matter of a few years until the standing stubs have become thoroughly infested with various species of woodworking insects, mainly beetles and their larvæ. At this stage of events the species in question as well as its near relative the American Three-toed, and to some extent other Woodpeckers, may be found for a few years in considerable numbers in territory of the sort described.

The species feeds almost exclusively on the timber destroying pests which work in dead woods, such being mainly beetles and their larvæ, only occasionally eating wild fruit and berries.

The nest is excavated in dead trees and stubs, both sexes helping in this task, and three to five, usually four glossy white eggs are laid about the last of May. Major Bendire gives the average measurement of the eggs as 0.96 x 0.72. The bird utters a call much like "w-e-e-a" in a shrill clear tone very frequently.

401. *Picoides americanus* Brehm. American Three-toed Woodpecker; Banded-back Three-toed Woodpecker; Ladder-back Woodpecker; White-backed Woodpecker.

Plumage of adult male: crown with an orange patch; above black, spotted with white on head and wings, barred with white on back; the outer tail feathers black and white, inner ones black; eye region black and white and sides barred with same; below otherwise white. Plumage of adult female: orange crown patch lacking, otherwise spotted or barred black and white above like male. Toes three. Wing 4.55; culmen 1.12.

Geog. Dist.—Northern North America east of the Rocky Mountains from northern Maine, New Hampshire, New York and Minnesota northward to Arctic Regions; resident where found save for a slight migration southward which may be more properly called a moving from the wilds into adjacent settled localities.

County Records.—Aroostook; rare resident of the wilder portions, (Knight). Franklin: rare resident, (Richards); rare winter resident, (Sweet). Hancock; rare resident of Union River section, (Knight). Kennebec; very rare, (Powers). Oxford; winter visitant, (Nash). Penobscot; rare resident of the wilder sections, (Knight). Piscataquis; rare winter visitor, (Homer). Sagadahoc; rare, two specimens only, (Spinney). Somerset; resident in

the northern wilds, seemingly very rare, (Knight). Washington; not uncommon, rare summer resident, (Boardman).

Though seemingly more rare than the preceding species in Maine it occurs in about the same places under practically the same conditions. This species is rather silent and does not give utterance so constantly to the peculiar "w-e-e-a" or "w-e-e-k" with which the Arctic species announces its coming and going.

In general its nesting habits and food do not differ from the former. Three to five glossy white eggs are laid in a hole excavated in some tree or stub, the time of laying being in late May. Major Bendire gives the average dimensions of the eggs as 0.91 x 0.70.

Genus SPHYRAPICUS Baird.

402. *Sphyrapicus varius* (Linn.). Yellow-bellied Sapsucker; Yellow-bellied Woodpecker; Red-throated Sapsucker; Squealing Woodpecker; Whining Woodpecker.

Plumage of adult male: top of head and the throat red; above black or blackish, barred irregularly with much yellowish white on back, and the wings white spotted; wing coverts nearly white; outer tail feathers with white margins, inner ones white with broken black bars; white line from bill to below eye; breast black and sides streaked with black; belly yellow. Plumage of adult female: throat white; outer tail feathers with partial white bars; otherwise much like male. Immature plumage: crown blackish, breast brownish gray, black barred, throat whitish; otherwise similar to adults. Wing 4.90; culmen 1.00.

Geog. Dist.—Eastern North America; breeding range from Massachusetts northward to Quebec, Great Slave Lake, Fort Simpson, North and South Dakota, Indian Territory and Texas; wintering from New York (rarely) and southern Missouri to the West Indies and Central America; accidental in Greenland.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; very general and quite common summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; common summer resident, (Sanborn). Knox: migrant, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident of proper localities, common migrant, (Knight). Piscataquis; abundant summer resident, (Whitman). Sagadahoc; common migrant, (Spinney).

Somerset; common summer resident, (Morrell). Waldo; rare, (Spratt); locally common summer resident, (Knight). Washington; common summer resident, (Boardman).

In migration I have known of their arriving as early as March 8 but usually not until the last of the month or the first of April, while in the fall nearly all have gone by the last of October though occasionally one will be found up to November 15. In migrating the species may be called quite common and of general occurrence. As a summer resident it should occur locally in every county in the State, and has been so reported from the larger portion of the State.

In the nesting season they prefer mixed or hardwood growth along a river, pond, stream or lake, or more preferably in a swampy tract of land which is subject to spring overflow and near the shore of a pond or river.

Along the coast I have found them nesting near the shores of our outer wooded islands in dead spruce stubs, while inland they nest in almost any suitable dead stub in the places they frequent, seemingly preferring dead ash stubs which have not yet really begun to decay. They nest rather early and often in the swampy tracts near ponds the water still covers the ground about their nesting stub. The cavity is excavated by both birds, and both do their part in the work of incubation.

Full sets of eggs are found from May 15 to June 8, and usually three to six, perhaps oftener five eggs are laid. These are glossy white. Four eggs were found in a nest in a spruce stub, twelve feet from the ground at Orono, May 31, 1893. These eggs measure 0.88×0.68 , 0.91×0.67 , 0.87×0.64 , 0.90×0.68 . Only one brood is reared in a season but if the eggs are taken the birds will lay again and again until their persistence is rewarded.

The nest can often be located by noting the sawdust and chips under the tree, which they usually let fall directly from the hole instead of carrying it away like many other species do. Their call sounds like the word "hwaee" uttered frequently in a shrill tone. In the spring they utter a peculiar "whoi, whoi"

during the mating season. They "drum" very frequently and keep it up for a prolonged period. The call of the young is a peculiar mewing purr, and nests with young are easily located at such times as they are all vociferously demanding food. Except when excavating for the nest this species rarely digs into rotten woods like the other Woodpeckers, and its insect food consists more of such species as it picks up from the bark and exterior portions of the tree.

It is rather injurious during the spring and fall at which times it visits the orchards and gardens, and seemingly spends much of the time industriously making small round holes which are about one fifth of an inch or less in diameter and which penetrate the outer bark into the sapwood. These holes are placed in rows around the tree, rather closely together, and one row above another so that there are sometimes hundreds or thousands of these small holes in one tree. Apple and pear trees and the mountain ash are the chief garden trees so treated, but they also treat likewise maple, poplar, oak, pine and birch among the forest trees. This treatment is a decided injury to the trees, and no benefit as the holes are not bored to secure insects, being placed in sound bark where there are no insects.

To my great regret I am obliged to place this species in the list of injurious birds, as while doing some good the ravages committed in the orchard more than overbalance the possible good they may do elsewhere. Our other Woodpeckers are all highly beneficial. Specimens of the Yellow-bellied Sapsucker which were killed while puncturing orchard trees had nothing in their digestive apparatus but the soft sapwood which was evidently the very thing they were seeking.

Genus *CEOPHLÆUS* Cabanis.

405a. *Ceophlax pilcatus abieticola* Bangs. Northern Pileated Woodpecker; Log Cock; Wood Hen; Woodcock; Black Woodcock; Laughing Woodpecker; Stump Breaker.

Plumage of adult male: top of head crested, scarlet; white stripe each side of crest and another back of the eyes which passes along neck to shoulders and forward to the nostril becoming yellowish forward; scarlet stripe at base of lower mandible; basal portion of wing feathers white; otherwise above blackish; throat white; under parts fuscous. Plumage of adult female: no scarlet on crown or at base of lower mandible; otherwise similar. Wing 9.00 to 10.00; culmen 2.12.

Geog. Dist.—The heavily wooded sections of North America from the Alleghany Mountains northward.

County Records.—Androscoggin: rare resident, (Johnson). Aroostook; rare resident of the wooded sections, (Knight). Cumberland; common resident, (Mead). Franklin; rare resident, (Swain); common resident, (Sweet). Hancock; rare resident, (Knight). Kennebec; very rare resident, (Dill). Oxford; breeds rarely, (Nash). Penobscot; still fairly common resident in the wilder portions of the county, (Knight). Piscataquis; common resident, (Homer). Somerset; rare resident, (Morrell). Waldo; very rare resident, (Knight). Washington; not uncommon resident, (Boardman). York; a few seen yearly, (Adams).

Though formerly common the range of this species is annually becoming more and more restricted, owing largely to the cutting off of the heavy timber and also to the fact that many are shot by the sportsmen. The species is still quite a common resident of the wilder sections of the State, preferring heavy timbered growth and usually liking the lower more swampy sections.

It is largely insectivorous, eating beetles and the larvæ thereof, especially the timber boring species, also ants and their larvæ, and in fall dogwood berries, choke and black cherries and other wild fruits and berries, also beechnuts and acorns for which it has a decided fondness.

Except the Flicker this is the only species of Woodpecker I have observed feeding on the ground, but this species likes to tear open the ant hills found in open places in the woods and feed on the ants and their larvæ. With their large powerful bills they will work into and disintegrate large rotten stubs, sometimes prying off sections as large as a man's leg. More than once I have heard a splitting and ripping equal in volume to the noise made by two or three men engaged in ripping and cutting up timber, and on investigating found one of these birds

engaged in tearing up a huge stub and searching for insects in the rotten wood.

It is almost impossible to mistake the signs left where one of these birds has been working as there is no other bird capable of doing so much work in leveling the rotten timber. While so engaged it is finding many injurious timber destroying insects which it devours, and the tearing down of the rotten stubs is also a benefit to the adjoining timber. The hammering and drumming of this species is to be heard a very long distance, being louder than one can imagine unless they have heard it.

They have several calls, one sounding much like "wuck-a-wuck" another like "cack, cack, cack, a cack, cack" and still another "hi-hi". One engaged in working in the rotten wood will often keep up a continuous chuckling and clucking, seemingly engaged in conversation with itself. At most seasons they are seen in pairs and probably remain mated for life.

An article written by the late Clarence H. Morrell which was printed in the Journal of the Maine Ornithological Society for July 1901, is so full of valuable information regarding their breeding habits that it is reproduced here in full. Mr. Morrell writes as follows: "For a number of years my acquaintance with this species was very slight, being limited to the examination of a few mounted specimens and an occasional glimpse of one in the woods, where they always seemed particularly wild and wary. On May 16, 1895, I unexpectedly formed a closer acquaintance with a pair of these birds. Returning from a trip through a large block of woodland, I had reached the outer portion of it, a small patch of good sized trees with a little underbrush, particularly separated from the main growth, by cutting, when my attention was attracted to a large hole, thirty feet from the ground, in a small beech tree. I had taken but a few steps toward the tree when the head of a Pileated Woodpecker appeared at the entrance. Although I had my climbing irons, I did not investigate, thinking the bird was digging the hole, and not wishing to drive it away. I had no idea what

time the eggs of this species were deposited and my books and papers furnished no assistance. With some misgivings I delayed visiting the nest until the 28th; I found the bird on the nest; a rap on the trunk brought her to the entrance, and as I started to climb she left, flying out of sight without uttering a sound. A slight noise proceeded from the cavity and by using a small mirror, I could see the chicks were just struggling from the shells. There were four eggs apparently about equal in size. I left at once and did not visit the nest again that season.

I made several visits to the grove early in May, '96, but no birds were seen there, though in the larger growth beyond I several times saw a bird calling and rapping. On the 11th I located a hole in a dead beech standing not far from the tree in which the brood had been reared the season previous. The hole was occupied, but so small a portion of the head protruded that I could not be sure that it was the bird I was looking for. All efforts to dislodge the bird failed, so I strapped on my climbing irons and ascended. When half way up the tree the bird, with erected crest and expanded wings, sailed from the nest to a tree near, from that to another, and so on until out of sight. The nest contained two eggs. On the 15th I again went to the nest and found the male there. I was within ten feet of the nest before he left the hole, and he lit near, staying within three rods of the nest, moving occasionally from one tree to another and tapping in a desultory way on the trunk all the time seemingly indifferent to my presence. The nest now contained three eggs, which appeared fresh and were left. I hardly reached the base of the stub before the male alighted at the entrance and after repeated inquiring glances within, entered. On the 20th I was again at the nest. This time the bird flew directly out of sight when I was part way up the stub. The nest hole was near the top of the stub, about $34\frac{1}{2}$ feet above the ground. The cavity was large, being wider at the top, tapering gradually toward the bottom. The entrance was four inches in diameter and did not enter more than two inches

before it was worked downward. The horizontal depth of the cavity, the ruler being placed on the lower edge of the entrance, was 11 inches. The vertical depth from entrance was 15 inches. The entrance and walls were smoothly chiseled. The three eggs differed greatly in size, measuring 1.43 x 1.03, 1.41 x 1.02, and 1.28 x 0.97 inches. Ten days later I passed that way and hit the stub in passing, to my surprise the male appeared at the entrance. I climbed to the nest two days later, and found it empty. The male was probably using it for a roost while another nest was being prepared elsewhere. During the winter following, some cutting was done in the grove and the stub just mentioned was cut down and hauled away. I carefully searched the grove for other holes and found a number sufficient to indicate that the birds had been nesting in the grove for a period of ten years at least. Several visits were made, but no birds were seen or heard until the 11th of May, when I found the male in the hole used in '95. He drew back out of sight as I approached and I did not disturb him, thinking he was using the old hole as a roost, but searched elsewhere. My search took me some distance from the stub, and I did not return to investigate it that day. On the 16th I was again at the stub, but no birds were in sight, and none appeared when I pounded the stub. This seemed to confirm my roosting theory and I did not climb, but commenced another unsuccessful search. Toward night on the 20th, I went to the grove again and found the male bird in the '95 hole. He drew back as before. When I climbed his conduct was much the same as it was the season previous; I was allowed to ascend nearly to the hole before he left, and he remained near moving from tree to tree, tapping on the trunk and limbs, alike indifferent to me and to the fate of the contents of the nest. The nest contained three eggs, counterparts of those taken the previous season.

I could not see that the hole had been changed in any way, but was just as it was left in '95. It was similar in shape to

the '96 nest, the entrance being five inches in diameter, the horizontal depth ten inches, and the vertical depth from the entrance, 17 inches. In 1898 I was away from home and did not return until May 14th. The next day I visited my woodpecker grove, and found a new hole had been dug in the old stub, a little below the last one used. I pounded the stub, but could start nothing. On climbing, I was somewhat surprised to see the male leave the old hole, already twice used. The new hole was but partly dug; the old one contained four fresh eggs. These I left until the next day, when I found the female on the nest. She left as I neared the nest, remaining near and calling once or twice, the first time either bird had uttered a note while I was at the nest. The nest hole was deepened three inches, but not otherwise changed. The four eggs were nearly equal size, much smaller than those of '96 and '97, and seemingly similar to those of '95. They measure 1.25 x 1.00, 1.24 x 0.98, 1.23 x 1.00, 1.23 x 0.94 inches.

In his "Life Histories," Bendire says of the nest of this species: "The entrance measures from 3 to 3½ inches in diameter, and it often goes 5 inches straight into the trunk before it is worked downward. The cavity varies from 7 to 30 inches in depth and is gradually enlarged toward the bottom, where it is about 6 inches wide.

My nests differ from this description, being the reverse in shape. The entrances are larger also.

The birds are probably mated for life. One brood is reared in a season. I find that when the set is taken another is laid and the brood reared just the same as if they had not been disturbed. The young birds remain with the parents some time after leaving the nest. I saw three birds at work on one tree Sept. 20th, '97. They were apparently a female and two young and were not at all suspicious, as I was able to get directly beneath the tree they were on and watch them for some time before they took alarm.

A young bird shot Sept. 26th and given me by an acquaint-

ance was very pin-feathery, with wing-quills and tail but partly grown. It was a male and the red malar patch was noticeable, so this marking is attained the first year. The stomach contained a considerable quantity of whole fruit and stones of the choke-cherry, as well as remains of ants and grubs. During the breeding season—always the noisy period in a woodpecker's life—my birds retired to the larger growth, a half mile away, to call and rap, never making any noise when in the grove containing the nest that would attract attention.

In my locality, this species does not seem to decrease in numbers, a condition probably equally true in most parts of the State. They are fairly prolific, have few natural enemies, and by their wariness and retiring habits, largely escape the semi-eternal gunner. With conditions thus favorable, they may be expected to hold their own fairly well. In "The Auk," Vol. XV, No. 2, Mr. Bangs calls attention to the well-known larger size of our northern bird, which he considers entitled to recognition as a sub-species, and names the Northern Pileated Woodpecker, *Ceophoeus pileatus abieticola*, choosing a Greenville, Me., bird as a type. The bird seems to have as good a claim to such recognition as some already in the "List."

With the bursting buds of May I hope to find my pair of woodpeckers back in the same grove, where, if nothing happens to them, I expect them to finish and occupy the hole commenced last summer in the old stub.

Since the above paper was read at our annual meeting in 1898, further observations have been made which may briefly supplement the paper, now requested for publication. Prophecy in bird life is, at best, of doubtful fulfilment, and it was with some satisfaction that I found, when I visited the old stub, on May 13, 1899, that the hole had indeed been finished, and at that date contained four eggs nearly one-half incubated. The entrance to this hole was four inches in diameter and it was 20 inches deep. The male was on the nest, remaining near and calling once.

It was just a year later when I made my next annual visit, and found that yet another hole had been made, still lower down, which was of the same general proportions as preceding ones, and about 18 inches in depth. The four eggs were much incubated though the season was unusually late.

The season of 1901 found me unable to do much outdoor work, but especial effort was made to visit the woodpecker grove which was done on May 6th. Another new and still lower hole had been commenced, but it was but partly finished and the faded appearance of the scattered chips indicated that nothing had been done for some days. No birds were seen or heard and it seemed very probable that this family so long a resident in an exposed locality, was at last broken, and one or both had come to the inevitable destiny of every bird—a tragic death.

In looking back over the years of my acquaintance with these birds, their love of home seems their strongest trait. Undoubtedly they were old and had lived in that grove many years. From a large and comparatively secluded woods, it has been reduced to a small grove, and their winter wanderings must many times have taken them some distance away, but despite the changes, that grove was home, and every April found them there ready to commence anew the real home life, for much of a bird's life is wandering, and home only a summer's joy.

Contrasting with this love of home was the indifference with which they looked upon the interference with the nest. Always the same indifference, never any especial interest, and no apparent regret when the eggs were missed.

Considering their wildness at other times of year, they are unusually tame and unsuspicious at nesting time. In digging the nest hole the chips are scattered about the stub, more being carried away, and are of course, very noticeable from their quantity.

The eggs of this pair of birds have always been in sets of three or four, and the similarity of these sets is perhaps the

strongest proof of the individuality of these birds. If four eggs were laid they were of about equal size, if three, of varying size. As time passed the birds seemed to nest a little earlier each year, this perhaps being due to my depredations and the necessity of nesting again, though this is crediting the bird with more forethought than most people would allow. This is probably the closing record of this pair of birds, and though I have known them long, I did not know them well, and most of their home secrets are secrets still. We know but little of the birds about us after all, and most of that little is the part we bring home and put in the cabinet. The life, the home, the family cares are ever an open book that he who would may ever read and never finish." C. H. MORRELL.

Genus MELANERPES Swainson.

Subgenus MELANERPES.

406. *Melanerpes erythrocephalus* (Linn.). Red-headed Woodpecker.

Plumage of adults: head, neck, throat and extreme upper breast red; upper back, primaries, wing coverts, base of secondaries, and tail black, the feathers of the tail more or less white tipped; rump, upper tail coverts, end of secondaries, lower breast and belly white. Immature plumage: head and neck grayish brown and fuscous; upper back ashy barred; end portion of secondaries black barred; lower breast and belly more or less streaked with dusky; otherwise like adults. Wing 5.50; culmen 1.17.

Geog. Dist.—United States west to the Rocky Mountains and from Florida to about 50° north latitude; local in New England; winters from portions of New York and Virginia southward.

County Records.—Androscoggin; one observed in Mechanic Falls, July 17, (J. M. O. S. 1905, p. 27). Aroostook; rare straggler, (Knight). Cumberland; rare, irregular transient, (Brown, C. B. P. p. 19); one in full plumage seen at Cape Elizabeth, May 15, 1904, (Brownson, J. M. O. S. 1904, p. 65). Franklin; rare, (Richards). Hancock; straggler, (Knight). Kennebec; (Larrabee). Knox; occasional visitant, (Rackliff). Oxford; visitant, (Nash). Penobscot; very rare, has been taken in July, (Knight); a male received from Howland about May 6, 1906, (Wm. Cooper). Piscataquis; rare, (Homer). Sagadahoc; rare, only three specimens, all in fall, (Spinney). Washington; very rare, (Boardman). York; breeds sparingly, (Adams); one taken near Biddeford in May, 1900, (J. M. O. S. 1902, p. 48).

The species is rare as a summer resident, occurring only very locally as such, while as a migrant it occurs more generally but is likewise rare. The passing stragglers occur in April and May and again in August, September and October. In the mid west this is a very common species and likewise a destructive one in more ways than one. They nest often in telegraph poles along the roadsides, and the excavating of these poles is one source of injury.

Then again they feed very largely on fruits such as peaches, cherries, apples, plums, pears, figs, grapes and on berries such as strawberries, raspberries, blackberries and mulberries, also on green corn, peas and similar garden truck. Of course various wild fruits, berries, acorns, beechnuts and similar material are relished. They also eat grasshoppers, crickets, seventeen year locusts, and various species of Lepidoptera, sometimes catching the insects on the wing.

Major Bendire also states that it destroys the eggs of other birds and their young and cites instances coming under his own observation as well as that of others where such destruction of other eggs or young was observed. What few injurious insects are eaten does not seem to compensate for the harm done by this species in the southern and western states.

In Maine however it will never be the source of any worry or the cause of any considerable damage as its numbers are few; it is not with us at times and in localities where the occasion to commit damage is offered to any extent, and with us my decision would be let it live and let the westerners take care of themselves as far as the present species is concerned.

The nest is excavated in some dead stub, limb of a tree or telegraph pole and four to ten, usually five or six, pure glossy white eggs are laid on the chips and sawdust at the bottom. Seven eggs were taken from a nest in a telegraph pole about ten feet from the ground, at Coffeyville, Kansas, June 29, 1894. These eggs measure 1.00 x 0.80, 1.02 x 0.82, 0.97 x 0.73, 0.98 x 0.73, 0.98 x 0.74, 0.98 0.72, 1.09 x 0.79.

I have often taken an egg or so from nests of this species, leaving one or two as nest eggs and kept them laying for a longer period, sometimes getting eleven or twelve eggs in this way. Near Dunlap, Illinois, they may have eggs by the middle of May and from then through June fresh eggs can be found. If robbed they usually lay another set in the same nest. The call note is a "chirr, chirr" and they also utter a rolling "ker-ruk, ker-r-r-uk".

Genus COLAPTES Swainson.

412a. *Colaptes auratus luteus* Bangs. Northern Flicker; Yucker; High-Hole; Clape; Golden-winged Woodpecker; Yellow-hammer; Wake-up; Ant-eater.

Plumage of adult males: a red band across back of neck; a broad black moustache like stripe on either side of throat from base of bill backward; top of head ashy gray; back and wing coverts brownish gray with black bars; visible portion of primaries from above blackish, save the shafts which are golden yellow; wings underneath yellow, more or less dusky marked in broken bars towards ends of feathers; rump white; upper tail coverts barred or streaked black and white; tail black above; shafts of feathers of tail black at tips and golden yellow towards base; tail yellow below with broad black tips to feathers, the outer feathers white barred or margined at tips; sides of throat, head and upper breast vinaceous; a broad black band across breast; under parts white or vinaceous tinged, thickly and heavily spotted with rounded spots of black. Plumage of adult female: the black moustache like streaks at side of throat lacking but otherwise similar. Wing 5.50 to 6.50; culmen 1.30.

Geog. Dist.—Northern and eastern America, south to South Carolina and west to the eastern base of the Rocky Mountains and Alaska in the breeding season; wintering from Massachusetts southward.

County Records.—Androscoggin; abundant summer resident, (Johnson). Aroostook; common summer resident, (Knight). Cumberland; common summer resident, (Mead); a Flicker has been living in Portland all winter, (Brownson, J. M. O. S., 1907, p. 17). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Murch); common on the wooded islands of the coast, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer resident, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; breeds commonly, and is the most common of our Woodpeckers, (Knight). Piscataquis; common, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight).



NEST AND EGGS OF THE FLICKER.

From *The Warbler*, by the kindness of Hon. John Lewis Childs.

Washington; abundant summer resident, (Boardman). York; not common, formerly abundant, (Adams); several remained in a sheltered valley among the pines near Eliot through the winter of 1898, (W. L. Fernald).

In the spring they occasionally arrive as early as April 6, but more usually in the neighborhood of April 20 and remain until late October or very exceptionally even until November 20, or even winter very rarely in southwestern Maine. The species is common, generally distributed and readily seen and recognized.

In the spring soon after their arrival the call "kee-ah" is usually the first indication that they are here, and this same call is heard more or less during their sojourn with us but is uttered more frequently in the early part of the season. I have also heard the young birds while yet unable to leave the nest, although nearly fledged, utter an abortive but still recognizable call of this kind in answer to their parents. Another call is a repeated "cuh, cuh, cuh, cuh, cuh, cuh, cuh, cuh, cuh, cuh," or sometimes "yucker, yucker, yucker, yucker, yucker, yucker," which I have heard only in the nesting season. Another call is "pee-up," "pee-up," or occasionally "pee-on, pee-on" or other variations. I have also heard a peculiar low purring call uttered as the birds were about to caress each other.

In fact the Flicker is very talkative and voluble and has a great range of expressions of the general types above mentioned. On one occasion I listened to a most voluble chuckling, clucking, purring sort of subdued conversation which was going on by the roadside, and on stealing cautiously up to see what kind of man, bird or beast might be the cause of these peculiar sounds I beheld a Flicker on top of a fair sized ant hill busily engaged in gobbling up the ants and their beloved larvæ, and doubtless expressing satisfaction at the bountiful feast it was enjoying. When the supply of ants became diminished it would stir up the hill with its bill until a fresh supply of ants were unearthed. Since then many a time I have found Flickers

engaged in similar occupation but never heard one so very happy and talkative as this one was.

These birds feed on almost every kind of insect imaginable, taking their food from the trees, and from the ground. They also eat a great variety of fruits and berries, mostly wild things here in Maine, and with us very seldom indeed take any cultivated fruits. Indeed in the fall when most cultivated fruits are ripe, they are most industriously engaged in hunting up ant hills and feeding on their occupants and have little time to waste in the cultivated lands.

The species nest in old stumps and dead trees, excavating a good sized and deep hole. Usually they may be found along streams and about the shores of ponds, in clearings, pastures and orchards, in fact nesting almost anywhere that a suitable stub can be found. I have even known them to nest in one lonely dead tree in the middle of a big field. Both birds help to excavate the nest and the scattered chips and sawdust below indicate clearly that there is a nest above.

Both birds incubate by turns and the male feeds the female quite frequently when she is incubating as well as taking his turn at the task of incubation. I have never, however, known the female to feed her mate while he was on the nest.

When the male arrives with food, he utters a peculiar low chuckling call, the head of the female soon appears at the entrance, and after taking the proffered tidbits withdraws.

Eggs are generally to be found about the last of May and the first two weeks of June, and these are a pure glossy white in color. The number laid has ranged from five to fourteen in cases where the birds were allowed to complete the set before being disturbed, but in cases where as an experiment an egg has been taken each day, leaving only one egg each time as a nest egg, large numbers of eggs have been secured. A case of this kind is recorded in the *Young Oologist*, June, 1884, p. 26, where the experimenter, Charles L. Philips of Taunton, Mass., took seventy-one eggs in seventy-three days, a most

remarkable performance. A case is reported in Forest and Stream, June 25, 1885, p. 427, where Mr. Stewart Ogilby of Staten Island, New York, found nineteen young Flickers in one nest.

The usual number of eggs laid is six to eight. Six eggs taken at Bangor, June 3, 1905, were in a nest in a dead stub near the edge of thick woods. The diameter of the outside of the hole was two inches and the depth of the cavity was two feet. The entrance was eight feet from the ground. These eggs were pure glossy white and measure 1.25×0.86 , 1.12×0.86 , 1.16×0.85 , 1.14×0.83 , 1.25×0.87 , 1.18×0.85 .

A set of eggs taken at Orono, June 14, 1893, which were known to be the second set laid by the birds that season were noticeably smaller in measurements, the eggs measuring 0.85×0.75 , 0.99×0.79 , 0.98×0.77 , 0.97×0.78 , 0.77×0.72 , all being smaller than normal and the last one far smaller than the others and nearly round.

Order MACROCHIRES. Goatsuckers, Swifts, etc.

Suborder CAPRIMULGI. Goatsuckers, etc.

Family CAPRIMULGIDÆ. Goatsuckers, etc.

Key to the species of CAPRIMULGIDÆ.

- A. Wing with a very conspicuous white spot, readily perceived when the bird is flying as well as when in hand. Nighthawk.
- B. Wing without white spot. Whip-poor-will.

Genus ANTROSTOMUS Gould.

✓417. *Antrostomus vociferus* (Wils.). Whip-poor-will.

Plumage of adult male: above brownish or grayish; the head finely mottled with black and white; back mottled with ochraceous buff and black; primaries black with rufous marks; tail black and cream whitish, the end of the three outer feathers white; upper breast with white band; lower parts in general mottled or barred blackish and cream buff. Plumage of adult

female: throat band buff; three outer tail feathers tipped with ochraceous buff. Wing 6.00; culmen 0.40. Base of bill with long stiff bristles.

Geog. Dist.—Eastern North America, west to the Plains, north to Nova Scotia, Quebec and northern Ontario, south to Indian Territory and Texas in breeding season; wintering from eastern Mexico and Florida to Guatemala; casual in Porto Rico and the West Indies.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; found at Houlton, (Batchelder, B. N. O. C. 7, p. 150); found near Eagle Lake Mills, (Morin); heard at New Limerick and Monticello, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Richards). Hancock; summer resident, (Dorr). Kennebec; rare summer resident, (Gardiner Branch). Knox; migrant, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident of more or less local occurrence, (Knight). Piscataquis; common, (Homer). Sagadahoc; very rare, (Spinney). Somerset; not common summer resident, (Morrell); locally common summer resident, (Knight). Waldo; locally common summer resident, (Knight). Washington; not uncommon summer resident, (Boardman). York; common summer resident, (Adams).

Owing to the great difficulty of detecting the arrival of this species, owing to its quiet and secretive habits during the day time, it is rather difficult to state just when it first arrives from the south and when it departs again. My own experience near Bangor is that the earliest date I have heard the species calling is May 15, and the last date I have seen it in fall is September 3, but I am inclined to believe it arrives earlier and remains later than is indicated by these dates.

These birds were especially numerous in the woods near the University of Maine in former years and during my student days it was quite usual to hear eight to ten calling during almost any pleasant evening of early June. As darkness approached first one and then another would call "wuck" "a-wuck" from the depths of the woods and after this had gone the rounds several times and darkness had settled down a bolder individual would begin "a-whip" "a-whip" and after getting its voice well tuned would boldly launch forth into the regular refrain "a-whip-poor-will-a-whip-poor-will-a-whip-poor-will-a-whip" and this was taken up on all sides.

Later on they left the woods and held seances on the roof over my head, sometimes driving me to desperation with their

pattering on the roof and their incessant calling. On several occasions I heard a peculiar purring "aw-aw-aw-aw" accompanied by fluttering of wings in a tremulous way and scramblings and slidings which indicated that two individuals were engaged in the affair.

During the daytime the birds roost preferably on the ground in woods and thickets from which they are sometimes flushed, not flying until nearly stepped upon. Occasionally one prefers to roost on a rock or lengthwise on a large tree branch, but this latter performance is more characteristic of the Nighthawk. The rather thick woods about ponds and along streams are favorite resorts of these birds, but they are locally plentiful in rather high open second growth woods such as Woodcock and Partridge often frequent.

Observers in other states have reported that sets of eggs are found in nearly the same locality or within a hundred yards of the same spot for several successive seasons. They also say that the first calls uttered in the evening before the birds have taken wing are usually from somewhere quite near the nesting site. The eggs, always two in number, are laid on the ground among the leaves and pine needles, usually under a bush, in a thicket or in rather open woods. Two eggs taken by a correspondent at Redwing, Minnesota, May 18, 1895, measure 1.20 x 0.86, 1.15 x 0.85. The eggs are pure white in ground color, marbled in a rather blurred fashion with lavender, lilac and pearl gray, occasionally heavier marked with brownish and drab. The eggs may be called decidedly handsome. Other observers have stated that if the eggs were disturbed and left the female would promptly remove them to another spot in her capacious mouth, and there have been instances recorded where the young birds were removed in the same way.

In the summer twilight I have observed individuals perched on the ground, on a fence or on the roof, calling vociferously, occasionally hopping into the air to catch a moth or other insect, and picking up similar material from the ground at

intervals. Their diet would seem to be entirely insectivorous and among the various things I have known them to eat are Sphinx moths of various species, *Actias luna*, *Samia cecropia*, *Samia columbia*, *Telea polyphemus*, and a great variety of species of Noctuidae, also grasshoppers, crickets, mosquitoes, caddis flies, and in fact almost any sort of insect available. The species is therefore highly beneficial and should be rigidly protected.

Genus CHORDEILES Swainson.

420. *Chordeiles virginianus* (Gmel.). Nighthawk; Bullbat; Mosquito Hawk; Pork and Beans; Will o' the Wisp; Pisk; Pyramidig; Cow-milker.

Plumage of adult male: above black, marked with white and buff or ochraceous; a prominent white bar crossing the primaries; outer tail feathers with white band near end and partial bars of buff; white throat band; chin and upper breast black with light tips to feathers; belly barred black and white. Plumage of adult female: tail without white; throat ochraceous buff; under parts more or less ochraceous tinged; otherwise similar to male. Immature birds: more finely and profusely mottled below, otherwise much like female. Wing 7.90; culmen 0.25.

Geog. Dist.—Eastern North America north to Labrador, south to Florida and west to the Great Plains, and in Washington, Oregon and northern California; winters in Central and South America.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 150); summer resident north to the Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer resident, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell)-Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common summer resident, (Adams).

Though somewhat local the species is a common and generally distributed species in most sections of the State. It arrives from the south sometimes as early as May 13, more often about May 20, and departs in late August, a few stragglers remaining



NIGHTHAWK ON NEST.
EGGS OF THE NIGHTHAWK.

Photograph by Ora Willis Knight.

until September 10 to 15. In the spring I have never seen the large bands arriving in migration, the birds seeming to appear suddenly and singly, but in fall it is very usual to see in late August large scattered bands migrating in the day-time, usually in the afternoon.

At times in August I have seen Nighthawks flying towards the northwest in a loosely scattered band and as far as the eye could reach in all directions there were Nighthawks, so that such flocks must number thousands. Bands of a few hundred are rather more frequent. At such times they fly at an elevation of two or three hundred feet, some individuals performing evolutions to snap up various insects which come their way, while others proceed ahead regardless of anything.

When they arrive in the spring they are usually quiet during the day time, roosting on the ground along the gravelly shores of rivers or on rocky and gravelly hillsides in open places. Some also roost on the gravelly roofs of buildings in the cities and others perch lengthwise on the branches of various large trees, usually seeming to prefer elms or maples. At the approach of twilight some individual will utter a "peep" in rather sleepy tones, this followed by another and another cry, finally the bird rises in the air and proceeds to seek its food, still keeping up the occasional "peep" now and then varied by a "pork" or a "waugh" or a "whoaup" which three latter sounds are produced by the rush of the air through the wings, the bird diving headlong from a considerable height and turning to rise again, at about the turning point these sounds are emitted. The "peeps" uttered in the air sometimes sound like the word "beans" uttered in a nasal tone, whence the name "Pork and Beans" applied to the bird. They spend much of the night in the air, flying around in spirals, soaring with wing motion, or often flapping their wings a few times, diving, rising abruptly and performing the most startling evolutions. On still, pleasant evenings they fly very high up, but stormy nights they fly lower down.

As nearly as I am able to judge they feed almost exclusively on prey caught while on the wing and eat almost everything in the insect line which is capable of flying. I have found in their stomachs moths, butterflies, beetles, caddis flies, and almost every kind of winged insect imaginable. Everybody knows that at a certain season in the summer there comes two or three days when the air is full of large, black, winged ants, and at such times I have known Nighthawks to be literally gorged with them, the stomach of one bird containing fully three hundred.

No nest is made, the birds laying two eggs on the gravelly shores, on rocky and pebbly open hillsides and pastures, on the gravelled roofs of city buildings, among cinders along railroads and even on sawdust beds. A rather strange fact is that the eggs always, as far as my experience goes, resemble in color and general markings the material on which they are laid. For example eggs laid on a roof covered with crushed granite of the rather coarse black and white type were coarsely and evenly blotched with brown, black and buff. Eggs laid on a slaty bed were lightly and finely marbled with grayish slate, the ground color being buffy. Eggs from the "Ore Mountain" at the Katahdin Iron Works had in general the peculiar rusty tints which so closely matched the rusty iron ore on which they were laid. Eggs from a sawdust bed were finely specked with the colors such as weathered wood takes on. It would be interesting to ascertain if an individual of this species had power over the color pigments of its ovaries in any way. A matter which may throw a little light on the subject is the fact that the eggs of the Nighthawk generally may be found in about the same spot each year, indicating that the same birds return to nest at their former homes. I have been able to follow up the general type of eggs secured from the granite covered roof previously mentioned and these eggs laid different seasons were of the same type. Again eggs from the slate roof (a flat roof covered with slaty pebbles) were of the same

type from year to year. If robbed the birds will lay again near the same spot, often only one egg being the second set.

In general the ground color of the eggs varies from white to cream, buff and gray, more or less marbled, spotted, blotched and finely dotted with black, drab, smoke color, gray, lavender, lilac, olive and brown. They are usually rather evenly marked over the entire surface with such profusion as to often obscure the ground color. Two eggs from the granite covered roof, taken July 4, 1892, measure 1.25 x 0.87, 1.14 x 0.86.

Two eggs from the "Ore Mountain," Katahdin Iron Works, June 26, 1903, measure 1.19 x 0.87, 1.19 x 0.87. Several photographs of the female were secured on this latter nest. She was very tame, submitting to the operations of focussing and making the exposures, although the camera was only about ten feet away. At first she watched every move with some alertness, but finally her eyelids closed, opening again frequently, and finally she seemed asleep and nearly all of the photographs show her sound asleep on the nest. Indeed the hot June sun beating down on this unprotected, rusty, barren spot might well make her sleepy. As the birds are so very tame it is almost impossible to find a nest without going so near as to nearly step on the incubating bird. Sometimes the male bird roosts near the female, but usually he is not in the vicinity, and I have not been able to assure myself that he ever helps in the task of incubation.

Suborder CYPSELI. Swifts.

Family MICROPODIDÆ. Swifts.

Subfamily CHÆTURINÆ. Spine-tailed Swifts.

Genus CHÆTURA Stephens.

425. *Chætura pelagica* (Linn.). Chimney Swift; Chimney Swallow.

Plumage: fuscous all over, slightly more grayish on throat; a blackish spot before the eye; the tail feathers ending in webless spiny extensions of the shafts.

Geog. Dist.—Eastern North America, breeding from Florida to Labrador; wintering in Mexico and Central America.

County Records.—Androscoggin; abundant summer resident, (Johnson). Aroostook; summer resident, scattered through the wilder uninhabited sections and quite common in the region of settlements, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, (Murch); locally common, even on the outer inhabited islands, (Knight). Kennebec; abundant summer resident, (Gardiner Branch). Knox; summer resident, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; abundant in settled portions, scattered through the wilderness, (Knight). Piscataquis; common summer resident, (Whitman). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common summer resident, (Adams).

The first arrivals from the south sometimes appear as early as April 27, more often the first week in May, and from then until late August, or occasionally even as late as September 15 the species is found in the State. It is common throughout the summer in settled regions, and rather scattered in the forest tracts but general throughout the State. The species is among the most aerial of birds, spending a great portion of the time on the wing. They fly in short circular sweeps, keeping the wings moving with quick fluttering strokes.

When engaged in nest building they often sweep repeatedly past a dead twig on some tree, making attempts to grasp and break it while in flight until finally successful in their efforts, when the twig is borne to the nesting site. All nesting material is thus taken on the wing, and so quickly is it grasped at that the momentary halt can scarcely be detected. I have watched them very carefully through a glass and am inclined to feel sure that both feet and bill are used in securing the material, sometimes the one and again the other.

The usual nesting place is down a chimney, preferably one which the birds judge will be unused through the summer. The twigs of which the nest is composed are glued to the bricks

of the chimney with a peculiar glutinous saliva secreted by the birds. The completed nest is half basket shaped, composed of small twigs two or three inches in length and unlined. It takes the birds about a month to complete the nest, which might be expected as it requires considerable of the glue to hold the twigs together securely.

I have observed a certain pair of birds which nested in a chimney where observations could be made by removing the thimble cap in a room below. These birds began building May 15, but it was the middle of June before the eggs were laid and the nest construction continued at intervals for some time after the set was completed.

One of the parents would appear with a twig and the other immediately left the chimney. The bird then braced itself against the bricks with its feet and tail and proceeded to labor long and earnestly to attach the twig to the bricks, evidently seeking to thoroughly cover the foundation with the gummy saliva. Only two or three twigs were attached the first day of building, and if these were well hardened, as many more would be attached the next day, each bird taking turns at bringing material or sometimes spelling one another in covering with saliva the twigs already attached, but almost invariably as soon as one bird entered the chimney, hovering over the opening a second, uttering its characteristic rattling chirp, the other one would prepare to leave, and as one dropped down with slightly fluttering wings the other would be scrambling upwards along the chimney side, to take wing and fly away.

The eggs were laid every other day, and the first egg hatched in nineteen days, the others at daily intervals, so that the first egg hatched in nineteen days and the last one of the four in twenty-two days from the time when the first egg was laid or the interval between laying the last egg and the last one to hatch was only sixteen days, each egg hatching in a day less time than the one preceding. My observations were interrupted before the young had grown enough to be studied under

the disadvantages prevailing, but it was between twenty-nine and thirty-one days after hatching before they finally left the nest, being seen by me on the thirty-first day on the limb of a near by elm from which they essayed short flights, and as I had not visited the locality for two days they might have left the nest any time between the periods mentioned.

Both birds aided in incubating and feeding the young. The act of mating was accomplished on the wing, the male and female flying in a short circle, the male to the rear, and the mating being accomplished very quickly. Both while on the wing and in the chimney the species utters its peculiar well known twittering call much like "switter-switter-switter-cheee." In some chimneys dozens of pairs nest while in others only one or two will be found.

I have found them nesting in barns in the country districts, and in old logging camps in the woods, making similar nests which are placed against the walls of the buildings. There is no doubt but that some still nest in trees as I have seen them entering large, hollow, inaccessible trees in the northern woods.

The eggs are pure white, often stained with soot, and three to five are laid at dates from as early as June 15 to July 10. A nest, taken eleven feet down in a chimney on July 2, 1884, contained four fresh eggs. Three of these measure 0.75×0.52 , 0.73×0.51 , 0.74×0.50 . The fourth egg somehow was lost and has not since been located, doubtless being "nipped" by somebody to whom I was showing my collections. It is indeed strange but true that specimens sometimes disappear under conditions which would indicate the cause of such disappearance to be a source which would be supposed unimpeachable, and to whom a bird's egg would be of no use, though in cases where handsome mineral specimens have disappeared after an influx of fair curiosity seekers the temptation can be better understood.

The food of the Chimney Swallow consists of almost any of the smaller insects which fill the air of a summer's day, mosquitoes, midges, flies, small moths, winged ants and similar material, so that we can call the Swift very beneficial.

Suborder TROCHILI. Hummingbirds.

Family TROCHILIDÆ. Hummingbirds.

Genus TROCHILUS Linnæus.

Subgenus TROCHILUS.

✓ 428. *Trochilus colubris* Linn. Ruby-throated Hummingbird.

Plumage of adult male; wings and tail fuscous with a purplish iridescence; other upper parts a beautiful metallic green; throat ruby red with metallic or iridescent reflections; upper breast whitish; belly dusky; sides greenish tinged. Plumage of adult female: ruby red throat patch wanting, otherwise more or less similar. Wing 1.56; culmen 0.69.

Geog. Dist.—Eastern North America, breeding from Florida to Labrador and westward to the Plains; wintering from southern Florida to the West Indies and Central America.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; fairly common summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer resident, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; fairly common summer resident, (Knight). Piscataquis; common, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; quite common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; summer resident; (Adams).

The Ruby-throat is a common summer resident, generally distributed throughout the State in the wilderness and even on the very outer wooded islands of the coast. Though occasionally arriving in the spring as early as May 10, the more usual date is about May 20, and in fall the majority are gone by September 10, rarely a few stragglers remaining up to even October 1.

These tame little birds are frequently seen in gardens hovering over nasturtiums and honeysuckles as well as other flowers from which they are engaged in extracting the sweets and small insects as well. Occasionally one will alight to preen itself and sway on a slender limb in the sun, soon to take flight

again. They eat large numbers of the smaller species of insects such as midges, mosquitoes, spiders, aphids and similar species. The honey from the flowers is fully as much a drink as a food for them. They are often so tame and confiding as to take honey and sweetened water from a flower held out in one's hand.

The nest is a dainty little object placed on top of a tree limb, and from below looking much like a moss covered knot. Various species of forest trees as well as garden shrubbery and orchard trees may be used as nesting sites and nests are situated at all heights from five to forty feet. Maple, beech and pine trees are perhaps most favored among the open deciduous forest growths which they frequent, while in the country orchards they select any handy tree, usually an apple or pear tree, while in the city gardens almost any convenient shrubbery may be seized upon. They have eggs about the first or second week in June with us.

The nest is a mass of willow down, spider webs, silky plant fibers and similar soft materials. The spider webs hold this together with great firmness. Almost invariably the nests are covered with fragments of moss and lichens externally. A nest in my possession measures 0.90 inch in height, 1.55 across and 0.75 inside. The eggs are pure white and invariably two in number with us, though in other states there are rare records of three eggs in a nest. I have personally examined fully two hundred nests of various species of Hummingbird, mostly those of other species than the present one and mostly Californian species, and never found more than two eggs or young in a nest. Two eggs of the Ruby-throat in my possession measure 0.53 x 0.34, 0.51 x 0.36.

The birds mate on wing, the pairing being preceded by a helter skelter chase. The cry or call is a peculiar rasping insect-like "kitch-u-kitch-u-kitch-u," something like which can be made by turning the stem of a watch backward quickly and irregularly. A favorite performance of the male is to rise in

the air and swoop quickly down, the whistling of his wings making a piercing "whee" or "chic-we-a" and again rising uttering his vocal note. The female is generally perched not far from the spot at which he reaches his lowest position and begins to rise in a sweeping curve. At such times the male is very pugnacious, driving rivals of his own kind and attacking other birds with success, even successfully driving Hawks, Kingbirds, Crows, etc.

If the female is closely watched at times when done with feeding she sits on the trees near at hand and preens her feathers, she will often be seen to go to the nest, if it is near at hand, and after hovering over it will settle down. The female seems to do all the work of building the nest, incubating the eggs and feeding the young. Often nest building continues at intervals during the period of incubation, and sometimes even after the young are hatched. The incubation period is twelve days, and the young leave the nest about fifteen days after they are hatched.

Order PASSERES. Perching Birds.

Suborder CLAMATORES. Songless Perching Birds.

Family TYRANNIDÆ. Tyrant Flycatchers.

Key to the species of TYRANNIDÆ.

A. Wing over 3.00.

1. An orange red concealed crown patch present.

§. Lower parts white; tail black. Kingbird.

§§. Lower parts yellow; tail black. Arkansas Kingbird. (Adult).

(As the young of the Arkansas Kingbird are not likely to occur here no provision is made in the key for them).

2. No orange red crown patch.

§. Tail blackish. Kingbird. (Immature).

§§. Tail not blackish.

? Inner vein of tail feathers rufous; belly yellow. Crested Flycatcher.

?? Tail fuscous, inner vein not rufous.

- a¹. Wing six times as long as tarsus or more; tarsus about equalling bill.
- b¹. Wing under 3.50; breast and sides washed olive gray. Wood Pewee.
- b². Wing over 3.50; sides and breast like back. Olive-sided Flycatcher.
- a². Wing not over five times as long as tarsus; tarsus decidedly longer than bill. Phoebe.
- B. Wing under 3.00.
 - 1. Lower parts not partly white, decidedly sulphur yellow. Yellow-bellied Flycatcher.
 - 2. Lower parts partly or wholly white, only slightly tinged with yellow.
 - §. Wing over 2.60. Alder Flycatcher.
 - §§. Wing under 2.60; call note "che-bec, che-bec!" Least Flycatcher.

Genus TYRANNUS Cuvier.

444. *Tyrannus tyrannus* (Linn.). Kingbird; Bee Bird; Bee Martin.

Plumage of adults: above grayish slate; head with concealed orange red patch; tail black, white tipped; below white, slightly grayish on breast. Immature plumage: crown patch lacking; more or less buffy tinge to lower parts; otherwise much like adults. Wing 4.62; bill from nostril 0.50; tail 3.50.

Geog. Dist.—North America east of the Rocky Mountains and locally westward in Utah, Idaho, Nevada, eastern California, Oregon, Washington and British Columbia; breeding north to New Brunswick and Manitoba; wintering in South America, Cuba and the Bahamas.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; common summer resident about settlements at least, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, also on the islands, (Knight). Kennebec; abundant summer resident, (Gardiner Branch). Knox; summer resident, (Rackliff). Oxford; common summer resident, (Johnson). Penobscot; common summer resident, (Knight). Piscataquis; common, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; very abundant, (Boardman). York; quite common summer resident, (Adams).

The advance guard arrives sometimes as early as May 9, more often a few days later and by May 20 the species is common, remaining until into September, very exceptionally

as late as September 25. The nest is variously situated on the limbs of apple and other orchard trees, the tall elms and maples by the roadside, on overhanging limbs of trees bordering the streams and ponds, and even on the tops of stubs surrounded by water and not over two feet above the waters level in ponds. About the pond near Pittsfield the Kingbirds commonly nest on the top of low broken off stubs which are surrounded by water, and elsewhere along streams in more northern Maine they often nest in bushes overhanging the water.

The species is very generally distributed and common throughout the State, even on the inhabited outer islands of the coast. Near civilization they seemingly prefer to frequent the vicinity of farmhouses and the more scattered dwellings, but the species is equally at home in the wilderness along waterways and highways but never in the deep impenetrable woods away from natural or artificial highways. Both birds aid in building the nest and sometimes at least take turns at incubating, though other observers have stated the opposite was the case. However I have often seen both birds carrying nesting material at once, and I have also seen one bird take the place just vacated by the other on the nest, and with one particular pair saw such an interchange of places several times. The bird not incubating is however usually the male, and he guards the nest well from some commanding perch near by, uttering his harsh "chew-whe," "chick-ah," a cry very hard to put into words but well known to all. If great danger approaches, such as a Crow passing overhead, both birds are after it in an instant and pursue it a long distance.

They are very pugnacious and will drive away almost any bird that ventures into the vicinity, uttering loud, excited "chic-chew's" oft repeated. The only species which is anywhere the equal of a Kingbird is the Ruby-throated Hummingbird which is master of all, even driving the largest Hawks in terror, and before the Ruby-throat the Kingbird generally yields and flees.

Their food consists of moths, butterflies, small winged insects of various species common to their habitat, beetles and occasionally honey bees, and their food is generally taken while on the wing with the well known "snipping" sound made by the bill. Individuals which have acquired a liking for the bee diet will frequently take bee after bee as it alights heavily laden on the lighting board of the hive, and I have proved that worker bees are taken by actual examination of Kingbirds shot after being seen at such an occupation. However the actual damage to the bee industry is slight and more than counterbalanced by the injurious insects taken. They also eat some fruit, taking strawberries, raspberries, blackberries, choke cherries, red cherries and other wild fruits, rarely taking cultivated fruit of the same sort.

They have eggs during the first two or three weeks of June. The incubation period is thirteen days, and the young are able to leave the nest fifteen days after they are hatched. A nest taken from an ash tree overhanging the water at Orono, June 15, 1894, was situated on top of a horizontal limb fourteen feet from the water. This nest was composed of weed stems, rootlets, twigs and twine, lined with rootlets and most nests are very similarly constructed. This one was two and a half inches in height outside, the cavity was one and three-fourths inches deep, the outside diameter was six inches and the inside diameter three inches. The four fresh eggs that it contained measure 0.97×0.67 , 0.94×0.68 , 0.89×0.68 , 0.92×0.70 .

Three to six eggs are laid but four or five is the more usual number. These are white or pale creamy white, spotted with chestnut, brown, cinnamon, rufous, umber and lavender. The markings are generally grouped in a circular order about the larger end, but occasionally eggs are dotted with finer markings over the entire surface and exceptionally I have seen eggs with the circular wreath-like group of marks about the smaller end of the egg.

447. *Tyrannus verticalis* Say. Arkansas Kingbird; Western Kingbird.

Plumage of adults: crown with concealed orange red spot; head, neck and breast ash gray; wings dusky; tail black; outer webs of outer feathers white; throat and chest grayish; lower breast and belly yellow. Immature plumage: orange red crown patch lacking; yellow of belly paler; wing coverts bordered with buffy. Wing 5.00; bill from nostril 0.51.

Geog. Dist.—Western United States from the Plains to the Pacific, north to southern British Columbia and southern Assiniboia, south to Lower California; in winter ranging southward to Mexico and Guatemala; accidental in Maine, New Jersey, New York, Maryland and Iowa.

County Records.—York; the only specimen known from Maine is one taken at Eliot, (Purdie, B. N. O. C. 1, p. 73).*

In California this is the common Kingbird. Their call sounds more like "je-whew" but is very similiar to that of our eastern species. They are very noisy and in habits and food are similar to our eastern species. They are slightly less sociable and though being found in the vicinity of ranches and also among the eucalyptus trees fringing the city streets of southern California, their favorite home in that State, according to my experience, was in the sycamores and cotton woods which fringe the banks of the various waterways.

In late April and early May they build a nest which is very similar to that of the eastern species. A nest taken at San Diego, California, May 2, was situated fifteen feet from the ground in a cottonwood tree along the San Diego River. This nest was composed of rootlets and dry grass, lined with feathers and hair. Its external depth was two and a half inches, the internal depth one and a quarter inches, the external diameter five and the internal diameter three inches. The four eggs measure 0.96 x 0.72, 0.97 x 0.73, 0.96 x 0.73, 0.96 0.72. In color and markings the eggs are indistinguishable from those of the eastern species, being white or creamy white with the usual range of markings from chestnut, umber and cinnamon to lilac and lavender.

*The record as given in Ridgway's Birds of North and Middle America, Part IV, Page 669, is wrong, the correct locality being Eliot.

I fancy that in southern California this species showed a greater predilection for bees than does our eastern bird, but then wild bees were frequent along the canon walls and in the hollow sycamores so the diet injured nobody. They also partook of the various insects which came their way, taking them on the wing as their relatives do.

Genus MYIARCHUS Cabanis.

452. *Myiarchus crinitus* (Linn.). Crested Flycatcher; Great-crested Flycatcher.

Plumage: above grayish brown with slight tinge of olive green; outer vane of primaries margined and the inner vane of tail feathers except middle pair colored pale rufous; belly yellow, throat and breast grayish. Wing 4.10; tarsus 0.80; bill from nostril 0.59. The head feathers form a conspicuous, erectile, crest.

Geog. Dist.—Eastern United States, breeding from Florida to New Brunswick, west to Manitoba and the Plains; wintering from southern Florida to Costa Rica, Panama and Columbia.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Cumberland; uncommon summer resident, (Brown, C. B. P. p. 17). Franklin; rare summer resident, (Swain); common summer resident, (Sweet). Hancock; seen in Bucksport in 1899 and 1900, (Mrs. W. H. Gardner). Kennebec; summer resident, (Dill). Knox; not common summer resident, (Swain). Lincoln; not common summer resident, (Swain). Oxford; breeds rarely, (Nash). Penobscot; rare summer resident, usually only two or three individuals observed in the course of a season, (Knight). Piscataquis; not uncommon, breeds, (Homer). Somerset; quite common summer resident, (Morrell). Waldo; rare summer resident, (Knight). Washington; very rare, (Boardman). York; rare summer resident, (Adams).

This species seems practically confined to the southern half of the State and is not especially common anywhere. The first arrivals appear sometimes as early as May 9, usually about a week later, and remain until sometimes September 20. It is usually quite vociferous and especially when nest building makes its whereabouts known. Many times about the middle of June while passing along the highway near an old orchard have I heard a loud harsh "whuree, whuree, whuree," and looked to see a pair of Crested Flycatchers, one with its bill

full of nesting material and the other engaged in uttering the strident call.

I have never seen but one bird with nesting material, and the other was calling or possibly executing a song of triumph, and each accession to the nesting material is invariably greeted by these calls. Occasionally a call of "whit-whit" is uttered in a clear whistling tone. When the nest is being disturbed they fly about in anger, crying "week, week." They frequent rather open woods near water or old orchards along country highways.

The nest is placed in any convenient hole or cavity in a tree or stub at heights of five to sixty feet. A set taken by the late C. H. Morrell near Pittsfield, Maine, June 25, 1891, was in a hole in the broken down top of a tree at the edge of a large grove and about two hundred yards from the water. The nest was composed of dried leaves and feathers and lacked the usual snake skin. These eggs measure 0.86×0.66 , 0.90×0.66 , 0.90×0.66 , 0.87×0.66 , 0.86×0.65 , 0.85×0.60 .

Nearly all nests of this species contain one to three cast off snake skins, which seem to be used with perhaps the intention of frightening away various intruders. Four to eight, usually five or six eggs are laid, these are creamy buff colored, streaked very heavily as a rule with lines and scrawls of claret, brown, purple and lavender. The markings are generally heaviest on the major half of the egg. The incubation period is fourteen days and the young are ready to leave in about eighteen days after they are hatched.

The food of the species consists very largely of insects, practically all being caught on the wing. The birds perch on various conspicuous limbs and dead stubs, sailing suddenly downward with wings and tail spread to catch some insect and return again to the perch, erect their crests, flirt their tails and again catch something edible.

Genus SAYORNIS Bonaparte.

✓ 456. *Sayornis phæbe*. (Lath.). Phæbe; Pewee; Bridge Bird; Barn Pewee; House Pewee; Peewit.

Plumage of adults: above olive brown, much darker on crown which is fuscous or nearly black; wing and tail fuscous; outer tail feather whitish on outer vane; wing coverts narrowly edged with yellowish white; below primrose yellow, tinged with brownish gray on breast and sides. Immature plumage: wing bands rather distinct, tipped with cinnamon rufous; secondaries and tertiaries edged with brownish white; slightly more yellowish below; otherwise similar. Wing 3.40; tail 3.00; bill from nostril 0.40.

Geog. Dist.—Eastern North America, north to New Brunswick, Great Slave Lake and Fort Resolution, west to the Plains, Indian Territory and western Texas; wintering from the South Atlantic and Gulf States to eastern Mexico and Cuba.

County Records.—Androscoggin; common summer resident. (Johnson). Aroostook; summer resident and common in southern portion of county, rare in Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; rather common summer resident, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; visitant, (Norton). Oxford; breeds commonly, (Nash). Penobscot; common summer resident of settled portions, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; summer resident, (Knight). Washington; rare, (Boardman); a few seen every year during spring migration, (Clark). York; not common summer resident, (Adams).

In the spring the species arrives near Bangor from April 18 to April 26 and remains until about September 25. It is rather generally distributed throughout the settled portions of the State, and though scattered in proportion to the number of bridges and other suitable nesting places, may be rated as common. The species utters several well known calls such as "pee-wee, pewee," "phoebe phoebe," "pe-wit pewee and pe-wit."

They seem with us to prefer the region adjacent to water and usually can be found about a majority of the bridges and large culverts, only a pair to a given locality. Here they may be seen perched on the rail of a bridge or on some dead limb or stub near the water, sailing into the air after some insect, alighting, uttering their call, accompanied by a twitching of

the tail and wings and bobbing of the head. They are more rarely in Maine found about barns and out buildings. The nests are placed against beams and stone walls of culverts, on beams and in similar situations under bridges and in culverts or in out buildings, the same place being reoccupied year after year.

A typical nest, found attached to a granite block under a railroad culvert and about six feet above running water, was composed of moss, cemented together and attached to the foundation by mud, and lined with grasses of the finest nature and a little hair. The mossy outside of the nest was fresh and green.

The nest was two and a quarter inches high outside, and one inch deep inside, the external diameter was five and the internal diameter two inches. There were several old nests, the relics of previous years, all remaining attached to the walls of the culvert and seemingly in good condition. The five fresh eggs this nest contained, May 13, 1896, measure 0.74 x 0.58, 0.73 x 0.56, 0.76 x 0.57, 0.75 x 0.57, 0.74 x 0.56.

Nest building requires about thirteen days, though I have known exceptionally of a nest being built in seven days. The nest is started within a very few days after the birds appear at their old homes in the spring. An egg is laid each day until the set is complete. Three to eight, usually five pure white eggs are laid, generally unspotted but sometimes with a very few small dots of reddish brown about the larger end.

The male does some of the incubating, and is generally to be found guarding the vicinity when the female is on the nest. The male also helps in bringing the nesting material. The eggs hatch in thirteen days and the young leave the nest in fifteen days more. A second brood may be looked for later on, the eggs for this brood being laid about the 20th of June. The food consists of moths, beetles, mosquitoes, flies and almost any other winged insects, though in late summer I have known of at least one instance where both red cherries and raspberries were eaten in late summer.

Genus NUTTALLORNIS Ridgw.

459. *Nuttallornis borealis* (Swains.). Olive-sided Fly-catcher.

Plumage of adults: above olive brown, becoming more clove brown or fuscous on wings and tail; throat, middle of belly and sometimes narrow line in center of breast whitish; each flank with a tuft of yellowish white feathers; upper mandible black, lower mandible paler with darker tip. Immature plumage: wing coverts edged with ochraceous buff; yellowish tinge more pronounced below. Wing 4.10; culmen 0.65; tarsus 0.58.

Geog. Dist.—North America; breeding from the northern tier of states, southward in the mountain regions, to British Columbia and the Saskatchewan; wintering in Central America, South America to Columbia and Peru.

County Records.—Androscoggin; taken May 7, 1897, and May 20, 1898, near Lewiston, (Johnson). Aroostook; summer resident, rather common along the Woolastook River Valley, (Knight). Cumberland; rare, (Mead); common summer resident on islands of Casco Bay, (Swain). Franklin; rare summer resident, (Swain); common summer resident, (Sweet). Hancock; common summer resident on the islands and inland as well, (Knight). Kennebec; rare summer resident, (Dill). Knox; summer, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; tolerably common summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; nesting near Boothbay Harbor, June 17, 1896, (Noble). Somerset; common summer resident of northern county, not rare in southern section, (Knight). Waldo; common summer resident, (Knight). Washington; not uncommon summer resident, (Boardman).

The species arrives from the south from May 20 to May 25 and remains until late August or occasionally until September 15. It is a species of woodlands, frequenting the deepest woods but usually being near some small clearing or along the shores of some body of water. Individuals can usually be heard crying "whip-you-see" and are then rather readily discovered perched on some lofty commanding dead limb, tree or stub. The eggs are laid from the middle to the last of June with us. The nest is built on the top of a limb, usually in a spruce, fir, pine or hemlock at a good elevation and well out toward the end of a long horizontal limb. Only very exceptionally are deciduous trees used as nesting sites. On the coast where the trees are smaller the nests are of course lower down

and easier to get at, but inland they are generally fifty to sixty feet from the ground.

The nest is a beautiful compact structure of moss, lichens, *Usnea* and *Evernea*, lined with fine black rootlets and generally covered exteriorly with small lichens so that viewed from below it resembles a knot on the limb. Generally three, but occasionally four or only two eggs are laid. These are very handsome being a cream color, handsomely spotted and blotched with chestnut, umber, purple, and lavender, generally being wreathed about the larger end and rarely indeed about the smaller end.

The eggs measure about 0.85x 0.63 (Bendire). Though I have found many nests of this species I have not as yet discovered one which seemed accessible without considerable danger. The nest is usually readily discovered by going out in late June and locating one of the birds by hearing its whistling shrill call. It is only a matter of time before both birds will be on the scene and by careful watching the female will be seen to fly quite often and hover for a slight space of time over a spot in the vicinity of which careful search will reveal the nest. Indeed many times the female will actually light on the nest for the barest instant and again leave it. At such times her cry sounds much like "spill, spill, spill."

The food consists of the various insects frequenting such localities as the birds do.

Genus *CONTOPUS* Cabanis.

461. *Contopus virens* (Linn.). Wood Pewee; Dead-Limb Bird; "Pisser."

Plumage of adults: above olive brown with sometimes a slight olive green cast; wings fuscous with two more or less distinct white bars; tail fuscous; below whitish or yellowish white, with olive gray tinge on sides of throat and breast; upper mandible black, lower one light with slightly darker tip. Immature plumage: wing coverts edged with buff; yellower below; otherwise similar. Wing 3.20; culmen 0.50; tarsus 0.50.

Geog. Dist.—Eastern North America, west to the Plains, Indian Territory and Texas, and from Florida to Newfoundland in the breeding season; wintering from Mexico and Central America to Columbia and Ecuador.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; quite common summer resident, found north to the Woolastook, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; rare in summer, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; not uncommon summer resident, (Boardman).

May 21 to September 4 is the period during which this species occurs in the State. It is rather common in open mixed woods, and also in the wooded parks and tree-lined city streets. Here during the early summer days the species may be heard calling "pee-a-wee" which in later summer becomes uttered in a more drawling tone "pee—a—wee" or sometimes "pee—a—wu" uttered in the most disconsolate tone imaginable. I have also heard the call "kitchee-kit" uttered in a warbling tone by the male as he chased the female.

The nest is saddled on a limb of some hardwood tree such as elm or maple in the city streets, and oak, beech or maple in the forests, generally at a height of forty to fifty feet, while it also nests commonly in orchards, placing the nest in apple trees at from ten to fifteen feet elevation. Though the male is generally on hand to offer his oft repeated words of advice, he does not seem to do any active work, either at nest building or assisting in incubation, but I have however seen him feed the female more or less frequently while she was sitting.

The eggs are three or four in number, pale white to cream color, spotted and blotched in the form of a wreath about the larger end with brown, umber, purple, chestnut and lavender. I have seen one set of eggs which was wreathed about the smaller end.

A nest containing three fresh eggs was found June 20, 1895 at Orono. This was saddled on the branch of an elm tree thirty feet from the ground and on the shore of the Stillwater River. The nest was composed of fine dry grass, *Usnea*, *Evernia* and other lichens, lined with fine materials of the same nature. This nest was very profusely decorated with lichens exteriorly. Its outside height was one and a quarter and its inside depth three quarters inch, the diameter exteriorly three and a half and interiorly two inches. The eggs measure 0.73×0.55 , 0.71×0.55 , 0.72×0.55 .

The incubation period is thirteen days and the young leave about eighteen days after hatching. Only one brood is reared. The food consists of various insects caught on the wing. The birds are very partial to perching in exposed positions on dead limbs, whence the name of "Dead Limb Bird."

Genus EMPIDONAX Cabanis.

463. *Empidonax flaviventris* Baird. Yellow-bellied Flycatcher.

Plumage: above dark olive green, becoming fuscous on wings and tail; the wing coverts tipped with whitish or yellowish white; below sulphur yellow on belly and same with some olive green tinge on throat, breast and sides; upper mandible black, lower whitish; first primary shorter than the fifth. Immature plumage; wing bars more prominent and yellower and the under parts stronger yellow. Wing 2.50; culmen 0.50; tarsus 0.66.

Geog. Dist.—Eastern North America, west to Manitoba and Minnesota; breeds from Berkshire County, Mass., northern Maine and the northern portion of adjacent States northward to Labrador; winters in Mexico and Central America; casual in Greenland.

County Records.—Androscoggin; (Walter, B. A. C. p. 23). Aroostook; found throughout the county in the deeper woods, breeds, (Knight); Cumberland; quite rare transient, (Brown, C. B. P. p. 18). Franklin; rare summer resident, (Richards); common summer resident, (Sweet). Hancock; rare summer resident, (Knight). Kennebec; rare, (Gardiner Branch). Knox; summer resident, (Norton). Oxford; breeds at Richardson Lake, (Osborne, B. N. O. C. 4, 240). Penobscot; quite common local summer resident of the deeper woods, (Knight). Piscataquis; one observed, (Allen); have one taken near Dover, (Ritchie). Somerset; not common migrant, (Morrell);

locally found as summer resident, (Knight). Waldo; summer resident, (Knight); not uncommon at Islesboro in July, 1899, (Howe). Washington; not uncommon summer resident, (Boardman); I secured one in Lubec, June 2, 1905, (Clark).

They arrive about June 1, pass along in a few days through the southern sections of the State, and remain in their breeding grounds within the Canadian fauna through the summer. The last fall migrants are gone by the end of August or at most early September and they appear in southern Maine in August. Though really common in certain sections of northern Maine throughout the summer, the species is readily overlooked unless sought by a person well acquainted with its habits and notes.

During migration it is silent and passes through so quickly that it is overlooked in southern Maine where it must occur during migration in quite fair numbers. It nests on many of the larger thickly wooded islands along the coast, such as Deer Island, Mount Desert, Islesboro, Isle au Haut and in the deeper recesses of the moist interior forests of the northern, western and eastern portions of the State. Such sphagnum-carpeted, mosquito-infested spots as are delighted in by the Canadian Warbler are the homes of this species. In such spots in early summer one may hear a soft whistling "qu-e-e-p" or "seek," and if the author of these sounds be located you will have found a Yellow-bellied Flycatcher. The Flycatcher-like actions of other species such as the sallying into the air after prey, the twitching and jerking of tail and wings are equally characteristic of the Yellow-bellied species. Especially when it utters its cry does it undergo great tail and head twitchings and other bodily contortions.

The nest is situated on the ground at the foot of a bush or hummock and imbedded in the reeking sphagnum moss of the deep woods or sometimes in the upturned mossy roots of a fallen tree in a similar locality. The nest is composed of moss lined with black hair-like roots. Four or five eggs are laid, and these are creamy white, spotted rather finely about the

larger end with cinnamon, and walnut brown. Two nests were taken at Fort Fairfield by Mr. C. F. Batchelder on June 14 and June 27, each containing four eggs. One set measures 0.68 x 0.52, 0.68 x 0.52, 0.66 x 0.51, 0.66 x 0.51. The other set measures 0.67 x 0.54, 0.70 x 0.54, 0.67 x 0.53, 0.67 x 0.51. (Batchelder, B. N. O. C. Vol. 3 and Vol. 4.).

The food is almost entirely insects, and they would have no great difficulty in making many hearty meals per day on the mosquitoes which infest their haunts and which they take in goodly numbers along with other winged insects.

466a. *Empidonax traillii alnorum* Brewst. Alder Flycatcher.

Plumage of adults: above olive brown; the wing coverts tipped brownish ashy; wings and tail fuscous; below white ranging to grayish on breast and sides and yellowish on the belly; throat white; upper mandible black, lower one whitish. Immature plumage: wing bars ochraceous buff, otherwise similar. Wing 2.80; culmen 0.60; tarsus 0.65; tail 2.50.

Geog. Dist.—Eastern North America from Nova Scotia and New Brunswick through New England westward to at least Michigan; wintering in Mexico and Central America.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; seen at Houlton, (Purdie, B. N. O. C. 1, p. 76); common in the Woolastook Valley, (Knight). Cumberland; common summer resident, (Brown, C. B. P. p. 18). Franklin; common summer resident, (Swain). Hancock; quite common summer resident, even on the wooded islands, (Knight). Kennebec; rare summer resident, (Robbins). Knox; summer, (Rackliff). Oxford; rare breeder. (Nash). Penobscot; common summer resident of alder thickets, (Knight). Piscataquis; common summer resident, (Whitman). Sagadahoc; rare summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; not uncommon summer resident, (Boardman). York; one observed in Kennebunk, June 19, 1892, (F. H. Allen).

The species arrives about May 20 or a few days later and remains until exceptionally September 5. It is common throughout the State in suitable localities, such as bushy alder thickets by the roadsides and along streams and about ponds, being found almost anywhere that the suitable low bushy thickets occur. The note uttered in spring after its arrival is a "eaze-we-up" and when the nest or young are in danger it

flits about with twitching wings and jerking tail, uttering a "cek" of concern and alarm.

The nest is always placed in low bushes in thickets at heights of usually two or three feet, and the eggs are laid from the middle to the last of June. The eggs are three or four in number, creamy white to pinkish buff colored with dots, spots and blotches of cinnamon brown, umber and lilac about the larger end where they sometimes form an open, interrupted wreath. A nest taken at Bangor, June 21, 1895, was composed of fine weed fibres and fine grasses, lined with finer material of the same nature, and was situated in the fork of an alder bush, two and a half feet from the ground in a thicket. This nest was similar to many I have seen and measured two and a half in depth outside by one and a quarter inches inside, the exterior diameter was three and a half and the interior diameter two inches. The eggs measure 0.72×0.55 , 0.70×0.53 , 0.75×0.57 , 0.73×0.55 .

The nest is usually finished within ten days from its beginning, an egg is laid each day, and incubation begins at once. The incubation period is twelve days and the young leave the nest about thirteen days after they are hatched. The female does all the nest building and incubating, but the male encourages her by remaining in the vicinity and frequently feeds her, and also when the young are hatched helps to feed them.

Their food is almost entirely insects of the various species found in the vicinity, but they occasionally at least in late summer eat the small red "bird cherries," *Prunus Pennsylvanica*, a habit shared by the Kingbird and possibly by other Flycatchers.

467. *Empidonax minimus* Baird. Least Flycatcher; Chebec.

Plumage: above olive brownish; wings and tail fuscous; greater and lesser coverts tinged with ashy white, forming bands; below white, tinged with grayish on breast and sides and sometimes slightly yellowish on the belly. Wing 2.48; culmen 0.55; tarsus 0.55. Immature birds are a little more yellowish on belly below.

Geog. Dist.—Eastern North America; breeding from Pennsylvania and Texas to Quebec, Great Slave Lake and Mackenzie Valley; wintering in Central America.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; rather common summer resident throughout, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident inland but rare on the islands, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; one August 1, 1899, on Fox Islands, (Howe, J. M. O. S. 1900, p. 30). Oxford; common breeder, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common summer resident, (Adams).

In the spring the first arrivals appear sometimes as early as May second, but more generally about the eighth or ninth, and the majority depart in August, only stragglers being found up to sometimes September fifth. The species is generally common and well distributed throughout the State, frequenting orchards, the trees of city streets and parks, country roadsides and open growth along waterways.

Soon after their arrival the well known call "che-pec, che-pec" may be heard in the trees. When with its mate the male often utters a "twitter-wit" and also a warbling "per-wit-we-we." They are very prone to perch on stakes, bean poles and other prominent places, sitting there with twitching tail and wings, occasionally erecting their head feathers and crying "che-pec" and flitting into the air after some insect which is seized with a very perceptible "snipping" sound made with the beak.

The nest is very often placed in apple or other orchard trees at heights of ten to fifteen feet, or in maple trees at thirty to forty feet elevation and also in other hardwood trees which may be suitable. The nest is composed of fine silken weed fibers, cedar bark, willow down, thread, twine and hair. A pair of these birds nest in a maple tree opposite my home every season. Both birds make frequent visits to the bean-poles in my garden and tug strenuously at the soft fibrous portions of cedar bark which ultimately they secure and bear

triumphantly away. I am also of the opinion that the male aids in the work of incubation, though owing to the close resemblance of the birds to each other I am not positive that such is the case. On one or two occasions the cry of "che-bec, che-bec" has been uttered by the bird while on the nest.

The eggs are laid during the middle portion of June. A nest containing four eggs was found in the fork of a maple tree at Bangor, June 11, 1892. This nest was composed of fine silken plant fibers, willow down, thread and lined with hair. The nest was well cupped, two inches in depth outside by one and a quarter inside, and two and a half in diameter outside by one and a half inches inside. The eggs measure 0.63×0.52 , 0.63×0.53 , 0.63×0.51 , 0.64×0.51 . The eggs are a pale creamy white, unspotted and three to six but more often four are laid. The incubation period is twelve days and the young leave in about thirteen days after hatching.

The food is almost entirely of an insect nature, and practically everything in the line of small, winged insects is eaten, also many Lepidopterous larvæ. They take many canker-worm larvæ, hovering near a leaf and picking them up quickly, in fact practically taking all their food while in the air. The birds indulge in frequent squabbles and bickerings among themselves after their arrival in spring, probably while engaged in mating. A pair will return to the same locality for many seasons.

Suborder OSCINES. Song Birds.

Family ALAUDIDÆ. Larks.

Key to species of ALAUDIDÆ.

- A. Throat, forehead and line over eye yellow. Horned Lark.
- B. Throat, forehead and line over eye white. Prairie Horned Lark.

Genus OTOCORIS Bonaparte.

474. *Otocoris alpestris* (Linn.). Horned Lark; Shore Lark.

Plumage of adult males: forehead, line over eye, ear region and throat yellow; the tuft of feathers on side of head (horns) black; fore crown, patch from bill below eye and breast patch black; above more or less grayish brown or brownish ash, tinged with vinaceous; tail black, the outer feathers margined outwardly with white, the inner ones with brownish or vinaceous; belly white. Plumage of adult females: they lack the black forehead of the male, the black breast patch is smaller and duller, the yellow markings are not as bright, and the back is more streaked. Plumage in fall and winter: the black markings somewhat veiled by pale buff or pinkish tips to the feathers. Wing 4.20; tail 2.88.

Geog. Dist.—Northern Europe and Asia, Greenland, northeastern North America; breeding from Cape St. Mary to Hudson Bay and Labrador on American side; wintering southward to about 38°.

County Records.—Androscoggin; rare migrant, (Johnson). Aroostook; one specimen, (Knight). Cumberland; gregarious winter resident of variable abundance, (Brown, C. B. P. p. 17). Franklin; rare migrant, (Sweet). Hancock; winter bird of the coast, inland in late winter and early spring, (Knight). Knox; winter, (Rackliff). Oxford; occurs at Norway in winter, (Verrill's List). Penobscot; common near Bangor in January, February and March some years, none others, (Knight). Piscataquis; common, (Homer). Sagadahoc; plentiful late fall and early winter, few in spring, (Spinney). Waldo; some seasons common in February and March, (Knight). Washington; very rare, (Boardman); irregular winter visitant, (Clark).

The earliest fall specimen I have knowledge of was taken at Milo, September 25, but usually the species does not appear until about the middle of October. It is plentiful locally and sporadically along the coast through the winter and appears inland at various times during fall and winter, but is usually most frequently reported in January, and more especially February and March. The latest date of its occurrence was the first week in May when a specimen in the flesh was sent me by Wallace Homer of Monson, this being exceptional, but the specimen nevertheless was a typical example of the species.

With our present knowledge of the species we may say that it is chiefly a coastal species with us, being apt to occur inland at irregular intervals in late winter. Along the coast they occur in flocks of ten or fifteen to sometimes hundreds, *running* about among the sand dunes and along the shores. As they fly they utter a characteristic whistled call hard to put on

paper but readily recognized. They are often associated with the Prairie Horned Larks and Snowflakes, particularly inland. They consume an enormous quantity of grass and weed seeds of various sorts, such as dock, *Polygonum*, *Atriplex*, *Ammodendron*, *Cakile* and similar things. Their nests and eggs are not greatly different from those of the Prairie Horned Lark and are similarly situated.

474b. *Otocoris alpestris praticola* Hensh. Prairie Horned Lark.

Plumage: very similar to that of the Horned Lark from which it is distinguishable by its smaller size, white forehead and line over the eye, and throat which are entirely white or but slightly tinged with yellow. Wing 4.00; tail 2.70.

Geog. Dist.—Upper Mississippi Valley and Great Lake region, eastward through New England to Maine and New Brunswick; casual or accidental in Labrador; wintering in the Southern States.

County Records.—Androscoggin; a specimen taken from a flock of eight or ten near Lewiston by C. D. Farrar, February 26, 1897, (Farrar); nesting at Livermore, (Swain). Aroostook; Fort Fairfield and Fort Kent at season when they must have been breeding, (Knight). Cumberland; a flock of twenty-five seen at North Bridgton and four secured by J. C. Mead, March 13, 1897, (Mead). Franklin; summer resident of Eustis and Avon, common in migrations, (Sweet). Hancock; summer resident, seemingly rare, (Knight). Kennebec; nesting at Benton, (Swain). Knox; (Swain). Lincoln; (Swain). Oxford; observed between Andover and Norway, August 12, 1899, (Norton). Penobscot; quite common some seasons in February, March and April, a few remain all summer, (Knight). Piscataquis; specimens seen from the county, (Knight). Somerset; found nesting at Pishon's Ferry and observed in nesting season at various other places, (Swain). Waldo; both spring and summer resident in quite fair numbers, (Knight). Washington; one taken here, (Boardman).

Spring specimens have been seen or taken as early as February tenth, and in various inland counties the species occur locally in small flocks of ten or a dozen or associated with the Horned Larks in mixed flocks during late February and March. A few scattered individuals, probably more in the aggregate than we imagine, remain to breed in many localities throughout the State, but by late September all seem to have withdrawn southward. There is no reason why the species should not

remain all winter, (and very likely it does remain) but proof is still lacking.

They run along the highways and through the grassy, weedy fields in late winter, uttering a "we-tseet" or "weechy-weer." At such times they consume large amounts of weed seeds such as *Rumex*, *Polygonum*, *Chenopodium*, *Ambrosia*, *Setaria* and other grass and weed seeds, as well as what they can glean from the horse droppings in the highway. In the summer they take large quantities of insects such as beetles, grasshoppers, crickets, moths, worms and caterpillars. I have seen them take on the wing small moths which they flushed from the grass and caught much as a Flycatcher would.

The male bird begins to sing in late March or early April, uttering a soft rather pleasant "weechy, weechy, weer-weer" either on the ground or while in the air essaying a short flight, or sometimes from a commanding perch on a fence or large rock. The nesting season seems to be rather later in Maine than in other states. Mr. Swain found a nest containing four eggs at Pishon's Ferry, May 14, 1901. Mr. E. R. Chadwick found a nest and four eggs near Week's Mills, May 31, 1906. The nests are built on the ground, in a grass field or among the weeds of pastures and cultivated farm lands, usually situated in a slight hollow at the foot of a bunch of grass or weeds. A typical nest before me is composed of grass blades and a few weed fibers and is one and three-fourths inches high outside, one inside, four and a half in diameter externally and two and a half internally.

The four eggs measure 0.90×0.62 , 0.87×0.62 , 0.86×0.63 , 0.90×0.64 . This set was fresh May 12. Three to five but more often four eggs are laid, these are grayish drab or sometimes perceptibly whitish in color, and profusely blotched, sprinkled and peppered with brownish. Some eggs are wreathed about the larger end and others have a few blackish lines or scrawls on them. As soon as the first brood have left the nest

another lot of eggs is laid. The male bird helps to feed and tend the young but I do not think does much if any of the work of incubation.

Family CORVIDÆ. Crows, Jays, Magpies, etc.

Key to the species of CORVIDÆ.

- A. Plumage glossy black.
 - 1. Bill over 2.50. Northern Raven.
 - 2. Bill under 2.50. American Crow.
- B. Plumage not black.
 - 1. Back blue. Blue Jay.
 - 2. Back gray. Canada Jay.

Subfamily GARRULINÆ. Magpies and Jays.

Genus CYANOCITTA Strickland.

477. *Cyanocitta cristata* (Linn.). Blue Jay.

Plumage: above grayish blue save for a black band across back of head which continues down the neck and across the breast; wing coverts and secondaries tipped with white and barred with black; outer webs of primaries blue, inner webs slaty gray; tail blue, barred with black and all but the inner feathers white tipped; head prominently crested; below dusky whitish or grayish. Wing 5.30; culmen 0.98; tarsus 1.30.

Geog. Dist.—Eastern North America, breeding from the Fur Countries to Florida and Texas, west to the Plains; resident where found except in the very northern portions of its range.

County Records.—Androscoggin; common resident, (Johnson). Aroostook; quite common resident, (Knight). Cumberland; common resident, (Mead). Franklin; common resident, (Swain). Hancock; common resident inland, rare indeed on the islands, (Knight). Kennebec; quite common resident, (Sanborn). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; resident, most often seen in fall, retires to most secluded spots in spring and summer, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; common resident, (Spinney). Somerset; not very common resident, (Morrell). Waldo; common resident, (Knight). Washington; common resident, (Boardman). York; all too common, (Adams).

The Blue Jay is a character whose history would make a volume by itself, and who indeed can write it? The author has studied this bird in the north, south, east and west and

every fresh contact brings forth some new and unsuspected trait of Jay character. Its vocabulary is extensive. The usual call is the well known "jay, jay" varied by "dah, dah" or "hay, hay." At other times they say "cable, cable," "piss-light, piss-light," "peduncle, peduncle," "pooh, pooh," "ha, ha" "billy, billy, billy," "side-light, side-light," "hash, hash" and many other variations, as well as imitations of the cries and sounds of other birds and mammals. Once in mid-winter I heard the song of the Catbird in the deep sheltered woods and eagerly traced it up to make a new record, to find it was "only a Jay." The rascal discovered me and said plainly that he thought it was a great joke, calling repeatedly "jay, jay."

In the west the nests are placed in various hard wood trees at heights of ten to fifty feet, more generally not over twelve or fifteen feet up in osage orange hedges, orchard trees, cottonwoods, oaks, garden shrubbery etc. The birds were very tame and found as well in the streets of towns and villages and about farmhouses as in the open country tracts.

Here in Maine the species has a rather different tendency, especially in the northern sections. It prefers to resort more to the wilder, deeper woods and swamps, nesting in firs, spruces and evergreens as well as in deciduous trees, usually not over ten or twelve feet from the ground and near an old clearing or long disused wood road. With us they have eggs late in May or early June. A nest found June fourth contained four eggs. This nest was composed outwardly of twigs and rootlets lined with fine black rootlets and some feathers. It was four inches in height outside by two inside, six in external diameter and four inches in internal diameter.

The eggs measure 1.14 x 0.86, 1.11 x 0.85, 1.10 x 0.85, 1.11 x 0.84. Three to six, generally four eggs are laid, and these are olive green, pea green or rarely bluish in ground color, spotted and blotched chiefly about the larger end with brown and lavender, occasionally wreathed at the larger end or evenly spotted all over with finer dots. Both birds assist in

building the nest and in the duties of incubation. The eggs hatch in sixteen days and the young remain for at least twenty-one days in the nest, probably for a little longer period than this.

If the nest is approached by an enemy the birds dash fiercely down at the offender, uttering a harsh prolonged "jay j---a---y" or a "we-a-u-g-h" and I have had them strike me repeatedly on the head in their downward dash. When satisfied that resistance will be useless they retire to a distance to observe proceedings, uttering a plaintive, mournful "billy, billy, billy."

Their food is of wonderful variety. They eat almost anything in the insect or flesh line, either material taken themselves or that accidentally or otherwise killed and exposed. They have a great love for birds' eggs and nice tender young birds, and never fail to improve such opportunity, while if the parents offer too much objection and are not spry enough they too are killed. Mice, shrews, and small mammals are also eagerly eaten. Fruits, berries, wheat, corn, oats and other grains are relished. In the winter I have often seen a number engaged in pecking at meat or suet placed out by some kindly person for such birds as might be attracted to the spot.

In the hunting season there is a trace of maliciousness developed in the Blue Jay, and I have had them follow me through the woods with their harsh cries which alarmed all the game in hearing, while they were shrewd enough to keep well out of gunshot themselves. They delight to discover an Owl hidden snugly away and a flock of Jays will spend hours "mobbing" the luckless bird.

Genus PERISOREUS Bonaparte.

484. *Perisoreus canadensis* (Linn.). Canada Jay; Moose-bird; Whisky Jack; Whiskey John; Wis-ka-chon; Hudson Bay Bird; Caribou Bird; Meat Bird; Grease Bird; Camp Robber; Venison Hawk; Gray Jay.

Plumage: back, wings and tail gray, the feathers of the two latter for most part slightly white tipped; forehead white; back of head and nape sooty black; under parts ashy gray except throat and sides of neck which are white. Wing 5.70; culmen 0.90; tarsus 1.40.

Geog. Dist.—From northern parts of New England, New York, Michigan and Minnesota northward to Labrador and in the interior to Hudson Bay.

County Records.—Androscoggin; rare visitant, (Johnson). Aroostook; locally very common resident, (Knight). Cumberland; rare, (Mead). Franklin; very rare, (Swain). Hancock; rare, (Dorr); locally common in Union River district, (Knight). Knox; rare migrant, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; common in northern sections, rare near Bangor, (Knight). Piscataquis; common resident, (Homer). Somerset; common resident of northern sections, (Knight). Washington; common resident, (Boardman). York; a few seen, (Adams).

The true home of the species is the wilds of northern and eastern Maine. Elsewhere in the State it occurs only rarely, generally in the fall or winter season when it is semi-roving or semi-migratory. They are among the tamest, most impudent and unsuspicious birds imaginable. They will follow a hunter through the woods for miles in hopes of getting a chance to have a feast. They will enter a tent and steal anything in sight which attracts their attention as being possibly edible. Candles, salt pork, meat, bread, crackers, pickles and even soap being among the things which various people have observed these birds to steal. They certainly eat anything a man would consider edible and much that he would not. They frequently light on canoes and boats, peering about for opportunity to snatch and make away with some edible. They will almost take food from the very hand of a person eating his meal. Game which is killed and hung up is compelled to furnish tribute. Small birds, eggs and insects are eagerly eaten. Nothing is seemingly too insignificant to be worth eating.

Their flight is slow and rather heavy, but the birds hop and scramble about quite readily. Their cry is a querulous "quee-ah" "kuoo" or "wah," uttered as they perch on top of some tree or take flight. They nest in early March, making a nest of twigs and bark, lined with *Usnea*, and other lichens down and feathers. A nest is about eight inches in height

outside by four internally, seven in diameter externally by three internally.

Three to five, usually four eggs are laid, these are grayish colored, spotted and blotched with brown, slate and lavender. Major Bendire gives the average measurements as 1.16×0.82 . Lumbermen have repeatedly told me of finding the nests in March, usually noting a number of twigs on the surface of the snow and on looking up to see where they had fallen from would discover the nest in a fir or spruce tree at no great height. The bird was usually on the nest and was reported to me as sitting very closely so that it had to be removed by hand. While resident the species is semi-roving in nature, not always being found in the same regions for successive years.

Subfamily CORVINÆ. Crows.

Genus CORVUS Linnæus.

486a. *Corvus corax principalis* Ridgw. Northern Raven.

Plumage: pure glossy black with steel blue reflections; throat feathers narrow and pointed. Wing 17.00; culmen 3.00; tarsus 2.80.

Geog. Dist.—Northern North America, south to Maine, North Carolina, Michigan and British Columbia.

County Records.—Aroostook; rare at Houlton, (Batchelder, B. N. O. C. 7. p. 149); rare in the Woolastook Valley, (Knight). Cumberland; very rare winter visitor, (Brown, C. B. P. p. 17); seen at Little Park Island, Harpswell, Oct. 5, 1889, (Norton). Franklin; rare or accidental, (Richards). Hancock; resident, a few nest annually on the outer islands, (Knight). Knox; resident, (Rackliff). Lincoln; seen in June, 1897, (Norton). Oxford; visitant; (Nash). Penobscot; (Hardy). Sagadahoc; common, nests, (Spinney). Somerset; one shot at Pittsfield, November, 1897, (Morrell). Waldo; nesting occasionally, (Knight). Washington; not common, (Boardman); nest near Lubec, April 14, 1905, (Clark).

The raven is a bird of the coast in this State, except that it also seems to occur regularly in Aroostook County, elsewhere seeming to be only a straggler. They are rather rare residents and scattered along the entire coast.

A nest found April 14, 1900, on an island in East Penobscot Bay, was a large bulky structure composed of sticks, roots

and bark, lined with fine bark and hair. It was situated in a spruce tree some twenty feet up, and in size and general appearance resembled a Crow's nest. The male bird was shot as it left the nest. The eggs measure 2.03 x 1.30, 1.98 x 1.33 2.00 x 1.32. They are very similar to Crow's eggs but their larger size is very manifest when placed side by side with them. Three to six eggs are usually laid. These are pale pea green to greenish drab or bluish, marked rather profusely with brown, lavender and drab.

The cry of the birds is a hoarse "auk" "cr-a-u-u-k" or "butty-wau." A nest containing five nearly fledged young was found on an island in Penobscot Bay, May 16, 1896, and the birds flew about in circles high overhead uttering a constant hoarse "cawing" similar to but still very different from the well known distracted cry of the Crow. On this same island a large colony of Night Herons were nesting but scarcely any eggs remained in the nests, while underneath were dozens with "bill holes" in them, showing the destruction wrought by the Ravens. A later visit to the island revealed the fact that the Herons had been forced to desert it for a safer locality. Gulls and other sea-fowl are likewise robbed of their eggs and small young.

The Ravens have been accused (and probably justly) of killing newly born lambs. They readily eat carrion of any sort, also starfish, clams, mussels, sea-urchins and similar material of an animal nature. The same nest is often used year after year, and while with us they usually nest in trees, they sometimes nest on cliffs and in fact are said to usually do so further north. I am not able to speak any good words for them as I cannot discover any beneficial habit save that of scavenger, while they certainly are a menace to other birds and sheep.

488. *Corvus brachyrhynchus* C. L. Brehm. American Crow.

Plumage : black with bluish or deep purple reflections; neck feathers short and rounded. Wing 12.00; culmen 1.90; tarsus 2.30.

Geog. Dist.—North America from the Fur Countries to Florida and locally throughout the west to southern and Lower California; wintering locally from Maine and the northern tier of states southward.

County Records.—Androscoggin; abundant summer resident, a few seen in winter, (Johnson). Aroostook; common summer resident, (Knight). Cumberland; common resident, (Mead). Franklin; common resident, (Swain). Hancock; common resident, (Knight). Kennebec; quite common summer resident, rarely resident, (Gardiner Branch). Knox; resident, (Rackliff). Lincoln; common, (Norton). Oxford; common, breeds, (Nash). Penobscot; abundant summer resident, locally resident, (Knight). Piscataquis; summer resident, (Homer). Sagadahoc; common, (Spinney). Somerset; common summer resident; (Morrell). Waldo; common resident along coast, common summer resident inland, (Knight). Washington; common resident, (Boardman). York; common, (Adams).

Along the coast Crows are permanent residents, and inland they are very common throughout the entire State in spring, summer and fall. While nearly all the inland birds withdraw in late fall, a few remain in sheltered localities through the winter and others appear after a mild spell of weather. At such times I have watched them industriously searching for something over the snow clad fields, occasionally pausing to catch and swallow some edible thing. It was a puzzle for a long time what they were eating, but ultimately I discovered that they were eating large numbers of mice. As nearly as could be ascertained the Crows discovered evidences of the mice being in their nests or shelters under the snow by finding their breathing holes or other traces of their whereabouts, and then quickly got at and killed them and swallowed them entire.

During the winter the Crows frequent the vicinity of manure heaps in the fields, probably for several reasons, both for the sake of various pickings in the food line including mice which would be attracted to such places, and for the warmth also obtainable. In spring they will assemble on newly plowed fields and devour hundreds of grubs of June-beetles, cut worms and other injurious insects. After the young corn has begun to appear they will pull it up and will also do the same to sprouting potatoes, peas, beans and many other growing seeds.

Soaking these in tarred water previous to planting will prevent much of this sort of depredation.

During the summer the Crows still seek insects of various sorts, grubs, grasshoppers, moths, cutworms, caterpillars, potato bugs and their larvæ, mice and other related small mammals, the wild fruits such as strawberries, blackberries, raspberries, blueberries, "bird" cherries, choke cherries, black cherries, dogwood berries, arrowwood berries, poison ivy fruit and a still greater variety of wild fruits and berries. Various grain such as corn, wheat, oats, rye and barley are also eaten, but corn is their favorite grain and much of the corn so taken is waste, excepting that taken in the spring when they pull the sprouting seed.

They also prey on eggs and young of other birds occasionally but not frequently inland, on the coast however I have observed Crows leaving the outer islands and on landing found abundant evidence in the shape of eggs with fresh "bill holes" in them to prove that they had been eating eggs of Terns, Gulls and Guillemots. It was a mystery how they got the Guillemot eggs as these are concealed under the rocks so as to puzzle the collector to find and get at them. On the whole the Crow may be considered as a very beneficial bird. The accumulated evidence shows that they destroy large numbers of mice and other injurious vermin and insects, and the slight damage done by the Crows to growing crops does not nearly approach the damage that would have been likewise done by the vermin they have destroyed.

To illustrate their shrewdness I have seen them take sea-urchins and mollusks from the tide flats and rocks along the coast and carrying them to a considerable height drop them and descend to eat the inmate which had become accessible after the shell was so broken. They will eat almost anything edible, including carrion, in times of hunger.

In fall and winter they assemble in large flocks and roost at places which have been resorted to at similar times for many

years, leaving in small flocks and scattered groups at daylight and returning towards dusk. They likewise migrate in these large flocks in fall, but in spring they seem to return in small bands or scattered pairs.

When a band of Crows is feeding one or two are generally posted as sentinels and a "caw c-a-a-w" of warning from these is sufficient to make all seek safety. Their call "caw, caw" is uttered in varied tones and different accents so that it is capable of meaning a great many things from alarm to satisfaction, and one acquainted with their ways can usually tell just what they are saying in a general way. For instance I have never yet failed to correctly judge from their excited and confused cries that they had an Owl penned up somewhere and were engaged in "mobbing" it to their satisfaction. The alarm "caw" uttered sharply and quickly, which means "look out," is well known to about everybody who has ever seen a Crow. Their prolonged cries of distress when their home is menaced should be readily recognizable. The prolonged "ca-r—a—c—k" of a love sick individual in spring, uttered in various tones and drawn out into prolonged gurglings, though somewhat like the call of the young for food is still quite different.

The Crows nest in thick woods, open groves, along river bottoms in the trees and in any similar situation not too near a house and handy to a good food supply. A small group of trees in the middle of a field is very satisfactory to a pair of these birds. I have found nests in small spruce, fir, pine and poplar at not over ten to fifteen feet from the ground and also in the very tallest pines and spruces of the deep woods at varying heights up to a hundred feet from the ground. The lowest nest I ever found was five feet up in a thick bushy fir which grew with a few other bushes along the line between two fields. In general the nests in the smaller groves in places where the birds are unmolested are placed lower down than those in the taller thicker woods where the birds might be supposed to have many natural enemies besides human beings.

Almost any kind of tree is utilized as a nesting site, with a slight preference to pine and poplar near Bangor. The nest usually is built on a firm foundation of sticks and branches of various convenient kinds, then more or less cedar and hemlock bark is used; some nests have considerable mud cemented into the foundation, others are without it. They are lined with more or less fine cedar and other bark, and often horse or cow hair and wool. A nest found in a small spruce tree near Bangor about twenty feet up on small limbs and against the trunk was eight inches in height outside, and the inside hollow was three and a half inches deep. The external diameter was eighteen and the internal diameter eight inches. I have found full sets of eggs at various dates from April 21 to June 15, but the last week in April and the first week in May are the usual times to find eggs.

The set varies from four to seven, generally five or six. They are handsome and very variable, the ground color ranging from creamy white, bluish green, olive green to olive buff, spotted and blotched in varying degrees with brown, drab, lavender, gray and occasionally blackish. I have seen a few eggs nearly unspotted but a majority are spotted heavily and uniformly over nearly the entire surface. Those from a nest are generally similar, and sets taken in different seasons from nests in the same small grove resemble one another closely enough to satisfy me that the same birds sometimes nest for several years in the same spot or near it.

Both birds help to build the nest and incubate the eggs. An egg is generally laid each day until the set is complete; incubation requires seventeen to twenty days, varying according to season and atmospheric conditions as well as perhaps for other reasons. The young leave the nest in about twenty-eight days. A typical set of eggs in my collection measure 1.70 x 1.23, 1.59 x 1.21, 1.65 x 1.22, 1.59 x 1.26, 1.66 x 1.23. Crows can occasionally be learned to talk, uttering a few words in a harsh voice.

Family STURNIDÆ. Starlings.

Genus STURNUS Linnæus.

493. *Sturnus vulgaris* Linn. Starling.

Plumage of summer adults: metallic purplish above, the feathers tipped with buffy spots; lower belly, under tail coverts, wings and tail brownish gray edged with buff; lower parts purplish; bill yellow. Plumage of winter adults: upper parts spotted with brownish buff; under parts white-spotted; bill brownish. Wing 5.00; culmen 0.98; tarsus 1.18.

Geog. Dist.—Europe and northern Asia; accidental in Greenland and Maine; introduced near New York City.

County Records.—Washington; Mr. Nichols shot one at Calais, May 4, 1889, (Boardman).

The Starling is said to be a favorite cage bird in Europe. They are said in the wild state to live in flocks, nesting in holes in trees, eaves of houses, old towers, ruins, cliffs and bird houses erected for their use. Mr. Chapman records them as breeding in the roof of the Museum of Natural History in New York, and states that they are *walkers*, not *hoppers*. Four to six pale bluish eggs with granulated shells are laid, the nest being of twigs, lined with straw and fine grasses. I have four taken in Herefordshire, May 6, 1902, and they measure 1.17 x 0.82, 1.14 x 0.84, 1.16 x 0.82, 1.15 x 82.

The male is said to sing rather pleasingly, sitting on some prominent perch with ruffled head and throat, shaking and drooping his wings as he sings. The notes are said to be sometimes harsh but on the whole the song is satisfactory. Their food is said to consist of various insects as well as berries and grain.

Family ICTERIDÆ. Blackbirds, Orioles, etc.

Key to the species of ICTERIDÆ.

A. Under parts with yellow or orange.

1. Wholly yellow or orange below.

§. Tail feathers pointed; above brownish, streaked or spotted with black. Bobolink. (female and immature).

- §§. Tail feathers not pointed.
 - ? Rump and tail with orange color. Baltimore Oriole. (female and immature).
 - ?? No orange on rump and tail.
 - a¹. Yellowish green above and on rump and tail. Orchard Oriole. (female and immature).
 - a². Olive grayish above; hind neck and tail yellowish olive. Bullock's Oriole. (female and immature).
- 2. Not wholly yellow or orange below.
 - §. Throat and breast yellow without black; belly dark or black. Yellow-headed Blackbird.
 - §§. Throat and breast with some black or wholly so.
 - ? Throat black.
 - a¹. Back black.
 - b¹. Head, neck and malar region black. Baltimore Oriole. (male).
 - b². Malar region and forehead yellow or orange. Bullock's Oriole. (male).
 - a². Back greenish. Orchard Oriole. (immature male).
 - ?? Throat not black; breast with black crescentic patch; outer tail feathers white, showing plainly when the bird flies. Meadow Lark.
- B. Under parts without yellow or orange.
 - 1. Under parts, breast and belly black or black streaked or margined or tipped with white or rusty.
 - §. Wholly black below.
 - ? Back with bronzy color and reflections; tail over 4.25 Bronzed Grackle.
 - ?? Back not bronzy; tail under 4.25.
 - a¹. No red and buff shoulder patch.
 - b¹. Rump whitish, nape buffy. Bobolink. (male).
 - b². Rump not whitish.
 - c¹. Head and neck seal brown. Cowbird. (male).
 - c². Entire plumage bluish black. Rusty Blackbird. (male).
 - a². A prominent red and buff shoulder patch. Red-winged Blackbird. (male).
 - §§. Black, streaked, tipped or margined with rusty or white below.
 - ? Feathers tipped with rusty above and below. Rusty Blackbird. (immature).
 - ?? Feathers below not rusty tipped.
 - a¹. Rump not whitish; under parts streaked black and white or tipped with white. Red-winged Blackbird. (female and immature).
 - a². Rump whitish; nape buffy; feathers tipped buff or whitish below. Bobolink. (male.)

- 2. Breast and belly without black.
 - §. Throat black; under parts chestnut. Orchard Oriole. (adult male).
 - §§. Under parts not chestnut; throat not black.
 - ? Under parts buffy, occasionally black streaked. Bobolink. (female).
 - ?? Under parts grayish or slate color.
 - a¹. Grayish below. Cowbird. (female).
 - a². Slate colored below and above. Rusty Blackbird. (female).

Genus DOLICHONYX Swainson.

494. *Dolichonyx oryzivorus* (Linn.). Bobolink: Skunk Blackbird; Butterbird; Ricebird; Maybird; Meadow-wink; Reed-bird.

Plumage of adult male in breeding plumage: a buff patch on back of neck and middle of back usually streaked with same; scapulars and rump grayish white or whitish; top and sides of head, wings, tail and under parts black; the feathers of under parts more or less tipped with buffish fringe which wears away in late spring and summer. Plumage of adult female in breeding plumage: crown blackish with central buffish stripe; upper parts olive buff streaked with black; wings and tail fuscous; under parts yellowish or buffy. Plumage of fall and immature adults: much like the female but buffier below and more olivaceous above. Wing 3.80; culmen 0.56.

Geog. Dist.—North America; breeding from southern New Jersey to Nova Scotia, New Brunswick and Quebec, westward to Utah and northern Montana; migrating through the United States and wintering in South America.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; not rare at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 149); the species occurs between St. Francis and Fort Kent in the Woolastook Valley, and the denials of all the know-it-alls in the world can't prevent it from being there, (Knight); seen at Fort Kent, (Morin). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, (Murch). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; rarely breeds, (Adams).

The first Bobolinks appear between May fifth and May tenth, and are seemingly males, or at least the bright noisy

males are the first ones we notice, these often suddenly appearing in noisy flocks by themselves, and I don't recall ever seeing a female Bobolink before May fifteenth. They begin in fall to withdraw by late July and August and the latest I have ever seen them is September fifth.

One bright spring day I saw a flock of hundreds, all males, perched in the bushes along a little travelled road which went through a tract of overflowed meadow, later used as the nesting site of this species. They were filling the air with their noise, a medley of "chinks" "squeas" interspersed with snatches of their rollicking song. It seems likely that the sexes usually arrive separately.

Later on in spring the males are in full song from early day to late evening, singing in the air while taking their flight on quick wings over the meadow, or on the ground or in some tree or bush, uttering a great variety of rollicking notes. Somebody has interpreted their song thus: "bobolink, bobolink, spink-spank-spink, chee, chee, chee," but it is a hopeless task to transpose this variable bubbling song to paper.

The nest is placed on the ground at the foot of a tuft or tussock of grass, sedge, or a small bush in a field or meadow. It is composed of grass and fine weed stems, lined with finer material of the same nature. The female seems to do all the work of building and incubating, but the male does some little towards feeding the young as by that time much of his exuberance has departed. The eggs are laid from rarely as early as the first of June, more usually about the fifteenth, up to the last of the month. A set of six found June 6, 1894, were in a nest of fine grass placed in an open grassy field. The nest measured one inch in depth outside, one half inch inside, and three and a half externally by two and a half internally in diameter.

The eggs measure 0.85×0.62 , 0.93×0.61 , 0.93×0.62 , 0.93×0.63 , 0.90×0.62 , 0.88×0.61 . An egg is laid each day, incubation usually does not begin until the set is completed.

and the eggs hatch in fourteen days. The female usually runs through the grass to and from the nest, rarely flying directly up from it unless she is unexpectedly and suddenly frightened by being nearly stepped upon. As a pair of birds make more or less disturbance when a person comes into the field where they are nesting, it is hard to locate the nest unless it is found by accident or by flushing the bird from under feet. By two persons dragging a rope between them at dusk or on a very rainy day and proceeding through the field, the bird may be flushed from along the line of the rope and the nest located.

Five to seven, generally five or six eggs are laid. These are pearl gray or reddish brown, spotted and blotched with brown, chocolate, heliotrope, purple and lavender. The heavier markings are usually toward the larger end of the egg, though many are evenly spotted throughout.

Though the Bobolink is common and generally distributed in the State it must of course be sought in its favorite habitat, and it is useless for anybody to expect to find it in the backwoods. In fields, meadows, the grassy tracts along rivers and streams and similar places are where it can be confidently sought.

It has been denied that the species ever occurred in Aroostook County, but it has been reported from there by at least three responsible observers. Mr. Batchelder found it at Fort Fairfield, Mr. Morin reports it from Fort Kent and I found it in the breeding season in the bottom lands of the Woolastook between St. Francis and Fort Kent under conditions which indicated it was certainly breeding. There is no reason why it should not be common locally through many sections of Aroostook County, and it occurs throughout the adjoining portion of the British Provinces north of Maine, being reported by many observers in Macoun's Catalogue of Canadian Birds.

The food of the Bobolink with us is largely of an insect nature, and they eat almost anything in that line which may be found about their homes, such as beetles, grasshoppers,

especially when in the larval stage, grubs, worms, hemiptera, etc. They also eat all kinds of weed seeds, grass seed, etc., and various of the earlier wild berries and fruits. I have never known of their injuring any cultivated crops with us and they are exceedingly beneficial here. In the south they are the well known Rice Bird and settle in large flocks on the rice fields and cause extensive damage. However the southerners can protect their own, and are entitled to kill all birds doing damage to their crops, while in the north Bobolinks should be strictly protected by law.

Genus *MOLOTHRUS* Swainson.

495. *Molothrus ater* (Bodd.). Cow Bird; Cow Bunting; Cow Blackbird; Shiney Eye; Buffalo Bird; Lazy Bird; Clodhopper.

Plumage of adult male: all except head, neck and breast, which are seal brown, is glossy black with purplish and greenish reflections. Plumage of adult female: brownish gray, whitish on throat. Immature plumage: whiter below than in female, feathers buffy edged. Wing 4.20; culmen 0.65; tarsus 1.00.

Geog. Dist.—North America, breeding from Texas to New Brunswick and Manitoba; winters from southern Illinois through Mexico.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; summer resident, seemingly not common but found even in the Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, (Dorr). Kennebec; quite common summer resident, (Gardiner Branch). Knox; migrant, (Rackliff). Lincoln; one seen December 27, 1905, (F. M. David, J. M. O. S. 1906, p. 28). Oxford; breeds commonly, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; not common, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; rare summer resident, (Boardman). York; Cowbirds occur here and I have found one of their eggs in a Redstart's nest, (W. L. Fernald).

Rarely arriving as early as March twentieth, this species more commonly appears in small flocks of ten or a dozen about April first. They occur throughout the State, even to our northern boundary, generally near farmhouses and within the

confines of civilization, though rarely found along rivers in the wilderness. The fall departure begins in September and about all are gone by the middle of October, though exceptionally the species has been recorded as late as December twenty-seventh.

Small scattered groups may be seen in the barnyards and pastures during the period of their stay here. They feed on flies, ticks and an equally great variety of the insects found in barnyards and pastures, also various weed and grass seed, grain and berries, usually waste grain and wild fruits and berries being taken rather than material of any value in that line. Consequently as far as food goes the species is beneficial, but when it comes to a consideration of its breeding habits this balance is offset and we must finally place the species down as injurious and undesirable.

The female builds no nest of her own but lays her eggs in the nests of other birds, preferring the nests of the smaller Sparrows and Warblers such as Song Sparrow, Chipping Sparrow, Vesper Sparrow, Savannah Sparrow, Yellow Warbler, Myrtle Warbler, American Redstart, Chestnut-sided Warbler, Catbird, Wilson's Thrush, and in fact the nests of almost every species of our smaller birds to which they can obtain access in the absence of the parent. Some birds desert their nests on finding such unwelcome addition, while others hatch and bring up the interloper. Usually only one, but sometimes even two, three or four Cowbirds eggs are found in the nests of the smaller birds.

The eggs are grayish white, thickly speckled with brown, cinnamon, chocolate and allied colors, and measure about 0.90 x 0.70. The egg of the Cowbird hatches in ten days while most of our smaller native species have an incubation period of twelve to thirteen days or even longer, consequently as the Cowbird is careful to lay her egg in nests in which the eggs are fresh the young Cowbird hatches first and by the time the rightful owner's young have hatched it is able to get a

greater portion of the food brought and finally thrusts the rightful tenant's young from the nest to starve. Sometimes the old Cowbird throws out part of the eggs in the nest at the time she lays her own, and at other times the young Cowbird may throw them out before they hatch.

At about ten days age the young Cowbird is able to leave the nest and vociferously call "peer, perr" from some near by bush, while its foster parents, often not two-thirds as large, strive faithfully to fill its wide open mouth. The only call I have ever heard from adult Cowbirds is a guttural "quieack." As the Cowbird only has its young reared by sacrificing the lives of several young of our most beneficial species which would if allowed to grow up do far more good, it becomes evident that it is indirectly injurious and therefore undesirable.

Genus XANTHOCEPHALUS Bonaparte.

* 497. *Xanthocephalus xanthocephalus* (Bonap.). Yellow-headed Blackbird.

Plumage of adult male: chin and feathers in front of eyes black; head, neck, throat and breast, yellow; outer wing coverts white; otherwise wholly black. Plumage of adult female: forehead, throat, breast, sides of head and line over eye yellow, somewhat mixed with white; lower breast brownish dusky mixed with white; otherwise grayish brown. Wing 5.70; culmen 0.85.

Geog. Dist.—Western North America, breeding from Indian Territory northward to Manitoba, east to Illinois; wintering from the Southern States southward; casual in many of the Eastern States and accidental in Cuba and Greenland.

County Records.—Knox; a specimen was taken by Fred Rackliff at Spruce Head, August 17, 1882, (Norton, Auk. 11, pp. 78-79).

Though a mere straggler with us, only known in this one instance, the species is common enough in the middle west. They are birds of the reedy marshes and swamps, similar indeed in their habits to our well known Redwing. They often nest in such places in large colonies, being social enough as far as their own species is concerned, but seemingly being in colonies of their own species only.

A nest taken from the cattails at Cut Off Lake, near Omaha, Nebraska, June 18, 1893, was composed of grass and sedges wound and woven to the cattails in which it was situated about two feet above the water which was stated to be twenty-eight inches deep there. The eggs measure 1.10×0.70 , 1.07×0.69 , 1.04×0.68 , 1.05×0.70 , 0.95×0.65 . The ground color of the eggs is grayish or greenish white, and they are usually rather evenly spotted and thickly specked over the entire surface with brown, drab, pearl gray and rufous.

Major Bendire gives the incubation period as fourteen days and states that the young leave the nest in about sixteen days. Three to six, usually five eggs are laid. The food of the species consists of insects, and various weed, grass and grain seed according to other observers, but it would seem on the whole to be a beneficial species.

Genus AGELAIUS Vieillot.

498. *Agelaius phoeniceus* (Linn.). Red-winged Blackbird; Swamp Blackbird; Marsh Blackbird.

Plumage of adult male : shoulders (lesser wing coverts) bright scarlet, edged with ochraceous buff to buffy white ; otherwise black, and in winter tipped slightly with rusty. Plumage of young male : shoulder orange red mixed with black ; feathers above margined with buffy and rusty ; below whitish tipped, otherwise like adult male. Plumage of female : blackish, streaked with buffy and rusty above ; rump fuscous with ashy edging ; wings fuscous, the lesser coverts sometimes reddish tinged ; throat slightly yellow tinged ; breast and belly streaked black and white. Wing 4.80 ; culmen 0.82 ; tarsus 1.18.

Geog. Dist.—Eastern North America from Florida and the Gulf of Mexico to New Brunswick, Great Slave Lake and British Columbia ; wintering from Virginia to Central America.

County Records.—Androscoggin ; abundant summer resident, (Johnson). Aroostook ; local on the lakes and about the waterways, (Knight). Cumberland ; common summer resident, (Mead). Franklin ; common summer resident, (Swain). Hancock ; common but very local in summer, (Knight). Kennebec ; common summer resident, (Gardiner Branch). Knox ; summer, (Rackliff). Lincoln ; (Norton). Oxford ; breeds commonly, (Nash). Penobscot ; common locally as summer resident, (Knight). Piscataquis ; common,

breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common local summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common summer resident, (Adams).

Though I have seen the Red-wings as early as March 21, that date is unusual and they are more generally here about April 10. From then until late August the species occurs in local abundance. The rather loosely scattered colonies of three to fifteen or twenty pair may be found scattered throughout the State in suitable localities along the shores of ponds, sluggish streams, cattail swamps and similar situations where reedy, sedgy, bushy meadows and swamps afford suitable nesting sites.

The males may generally be both seen and heard as they perch on top of convenient bushes and other points of observation, uttering lazily "conk-a-ree" "con-quaree" as long as no danger menaces. When human intruders appear they rise, one after another and circle overhead and flit from perch to perch uttering a squeaky "che-w-e-e-é-é-é" or a harsh "chack, chack."

The females soon appear at this alarm and likewise add their "chuck, chuck" to the turmoil. As quiet again holds sway after the danger has departed the birds go back to their nests or perch lazily on the bushes, the males lazily stretch their wings and feet, running out a foot and wing on one side in a peculiar characteristic "stretch" and shortly going through the same on the opposite side and ad interim uttering more "conk-qua-rees." In the west I have seen colonies of hundreds and thousands, but here in Maine usually only a dozen or fifteen pair at the outside may be found in a given locality.

The nests are well woven from sedges, rushes and grass leaves, lined with finer sedges and grasses, being woven into and supported by the stems of cattails, rushes, sedges and bushes over the water or near the water's edge. A nest taken at Pittsfield, June 31, 1900, was in a tussock of sedge near the shore of the pond, and was the usual typical nest of woven grasses and

sedges. This nest measures four inches in external height by two and a quarter in depth internally, the external diameter is five and a half and the internal diameter three and a half inches. The eggs measure 0.99×0.73 , 0.98×0.76 , 0.99×0.73 , 1.02×0.74 .

Three to six, more often four or five eggs are laid from as early as June first to as late as the first of July, usually early in June. The eggs are pale bluish green or smoky gray, spotted, blotched and streaked with pen-like lines about the larger end, the markings being black, brown, drab, umber and lavender. The incubation period is fourteen days and the young leave the nest in about sixteen days. The female does all the work of nest building as far as I have been able to ascertain, but the male diligently watches over her safety from some commanding spot, feeds her from time to time and likewise helps feed the young.

Only one brood is reared, though other observers in Maine have thought differently. There is a great diversity in time of laying of the eggs, possibly owing to many pair having been drowned out or broken up on their first laying of eggs, which being the case they will lay again. The evidence seems quite clear that they do not lay again when they have successfully reared a brood that season.

After the young are on the wing they gather into flocks and feed more or less in the surrounding territory. They eat beetles, worms, moths, small grasshoppers, crickets, caterpillars, grubs and other insects, also later on in summer the seed of *Zizania*, *Calamagrostis* and other marsh grasses as well as various *Carex* seeds. There is good evidence that they sometimes take sprouting corn and peas as well as the same when in the tender stages of immaturity, but in Maine their damage to cultivated crops is at the most very slight, and the good they do by destroying insect pests entitles them to take a small part of what they have saved.



NEST AND EGGS OF THE MEADOWLARK.

From *The Warbler*, by the kindness of Hon. John Lewis Childs.

It is interesting in spring and fall to watch the wheelings and evolutions a flock of these birds go through, wheeling, lighting together, rising as one, circling about and again lighting on the trees or ground, all this accompanied by "chackings" and "chuckings."

Genus STURNELLA Vieillot.

501. *Sturnella magna* (Linn.). Meadow Lark; Old Field Lark.

Plumage of summer adults: above barred with very dark brown or almost black, bordered and tipped with rufous and buffy on back; a buffy line through center of crown; tail barred, the outer tail feathers white; sides of throat and ear coverts whitish; breast with a crescentic patch of black; throat, breast and upper belly otherwise yellow; sides and lower belly whitish with dark streaks. Plumage of winter adults and immature birds: crescentic patch on breast with buffy washing; upper parts more rufous brown; yellow duller below. Females differ in having more restricted and duller colored black crescent on the breast when mature. Wing 4.50; culmen 1.25; tarsus 1.70.

Geog. Dist. — Eastern North America, breeding from the Gulf of Mexico northward to New Brunswick, west to the Plains; wintering from Massachusetts and Illinois southward.

County Records.—Androscoggin; rare migrant, (Johnson). Cumberland; rare summer resident, oftenest seen in migration, (Brown, C. B. P. p. 16); one seen at Westbrook Jan. 16, and again Jan. 18, 1904, (Norton, J. M. O. S. p. 94). Franklin; rare summer resident, (Swain). Hancock; at least occasional summer resident, (Knight). Kennebec; a few pair observed breeding, (Swain). Knox; rare migrant, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; one shot at Newburg, April 8, 1898, and seen by me at Crosby's; I know of three pair breeding annually near Bangor, (Knight). Piscataquis; rare, (Homer). Sagadahoc; rare, one specimen, (Spinney). Somerset; rare summer resident, (Morrell); found an egg in my field at Pittsfield, July 22, 1904, (H. H. Johnson). Waldo; one seen, (Knight). Washington; accidental; one was found frozen with its head under its wing on a fence in January and brought to me, (Boardman, J. M. O. S. 1899, p. 28); an adult male shot at Lubec, October 10, 1904, (Clark). York; at Eliot and North Berwick in spring and summer, (H. P. Libby).

Though there are occasional instances of this species being taken here in winter it is more properly a summer resident, generally arriving in April from the eighth to the twentieth

and departing in late October. The actual number of individuals occurring is few, and they are scattered. For instance, within a radius of forty miles of Bangor there are only three pair that I know of. It is possible that they are somewhat commoner in Cumberland and York Counties, but an actual census even there would not show a very large number of individuals.

Here in Maine they prefer to frequent the fields, pastures, and more seldom the meadows. The male may generally be observed perched on a fence or in a treetop overlooking his home and frequently singing his pleasing lay of seven to twelve notes. They also have a song or call of three to four whistled notes. Their usual calls are a "peent" uttered quickly and nasally and also a "witter-witter-wit" uttered in a jerky grating tone, usually accompanied by a nervous twitching of the tail and wings.

The so-called *Sturnella magna neglecta* of the west which is recognized as a subspecies in the A. O. U. List is really a most distinct species in every way, the *Sturnella neglecta* Aud. It differs markedly in habits, song and general appearance as well as size, but because a few individuals have happened to hybridize and their ranges to overlap in the Plains region the authorities have chosen to consider the western bird a subspecies instead of a good species while they continue to recognize as good species the hair-split and barely recognizable island forms of Warblers, Finches and Sparrows found on certain islands of the Pacific, because forsooth they do not hybridize or intermix or their ranges do not overlap. But to return to our Maine Meadowlark again.

The nesting season in Maine is in June or July, usually early in June, the later layings being probably due to some accident to the earlier set as there is no good evidence of a second brood being reared. The nest is placed on the ground in a slight hollow at the foot of a tussock of grass in a field or pasture or at the foot of a small bush along the line between

two fields. Both birds assist in building the nest, using such materials as dead grass, sedges and fine weed stems which are woven together. The nest is generally arched or roofed over and often approached by an arched passage or tunnel through the grass. A nest before me is five inches in height outside by three and a half in depth inside, the external diameter six and the internal diameter three inches. The five eggs measure 1.06×0.80 , 1.05×0.80 , 1.02×0.80 , 1.05×0.79 , 1.02×0.78 .

The eggs are white or rarely slightly greenish white, blotched and spotted all over but usually heaviest at the larger end with brown, amber, purple and lavender. The markings are often very heavy or confluent at the larger end. Three to eight, more usually five eggs are laid, one each day, and incubation requires fifteen to seventeen days according to the weather. The male bird does his share of the work, and occasionally, very rarely indeed, will sing while on the nest.

The young are able to leave the nest and run through the grass in ten or twelve days, in fact long before they are able to fly. Later in the season the birds gather in small flocks or family groups, arising with a few chirps of alarm and flying away with alternate flappings of the wings and sailings, to alight on some fence or in another field. Their food is largely the various kinds of insects to be found about their homes, also some seed of weeds, grasses and grains. They are distinctly beneficial and it is a pity there are not more of them in Maine.

Genus *ICTERUS* Brisson.

Subgenus *PENDULINUS* Vieillot.

506. *Icterus spurius* (Linn.). Orchard Oriole.

Plumage of adult male: whole of head, throat, neck and upper back black; wings and tail fuscous, edged with whitish; lesser coverts, lower back, breast and belly chestnut. Plumage of immature male first year: sides of head and above grayish olive green; wings brown, edged with buff on the median coverts, forming two indistinct bands, the primaries and secondaries

edged with white; below yellow. Plumage of immature male, second year: similar to first year plumage but with throat black and occasional chestnut patches below. Plumage of adult and immature females: grayish olive green above; head, rump and tail rather brighter or olive green; middle and greater wing coverts whitish edged or tipped; wings fuscous; below dull yellow, occasionally with a few black feathers on the throat. Wing 3.10; culmen 0.68.

Geog. Dist. — Eastern North America, breeding from Texas and the Gulf States to Massachusetts and Ontario; wintering in Central America to Panama; casual in Maine.

County Records. — Androscoggin; have one taken near Auburn, (Pike). Knox; a specimen was taken at Thomaston by Chas. A. Creighton, (E. Smith). Washington; accidental, a male taken here in the early sixties, (Boardman).

The species is a mere straggler to Maine, only three specimens being known. I became well acquainted with them at Marlin, Texas, in May, 1891, at which time they were nesting. A nest which was discovered in its very first stages of construction was completed in six days and an egg was laid daily until a set of five was completed, when incubation commenced. Both birds help to build the nest and aid in the incubation. Several other nests observed here as well as others from elsewhere are all composed of the green fresh blades of a species of sedge which I have been unable to identify, the portions necessary to determine the species being lacking.

A typical nest composed entirely of this sedge is three inches in height outside by two inches in depth internally. The external diameter is four inches and the internal diameter two inches. The set of five in my collection, taken at Marlin, Texas, May 22, 1891, measure, 0.81 x 0.54, 0.80 x 0.55, 0.82 x 0.52, 0.82 x 0.53, 0.82 x 0.54. The nest was pensive in nature, fastened to the limb of a mesquite tree, thirty feet from the ground. The eggs are usually five in number, ranging from four to seven, and they are pale bluish white or grayish white in ground color, scrawled and blotched, chiefly about the larger end, with lines of brown, black, lavender, purple and gray.

I have noted a rather sharp note of alarm as well as a series of three or four querulous notes uttered by the birds in addition

to the loud, hurried, but very agreeable sounding song of the male. They eat all kinds of caterpillars, lice, flies, beetles, chafers and similar insects, mulberries, strawberries, cherries and other small fruits in season, but the insect diet predominates and such fruit as is taken is more than paid for. In Texas mesquite trees seemed to be the favorite nesting site selected but in the more northern states nests are placed in various orchard, roadside and other trees, usually near civilization or along some stream.

Subgenus YPHANTES Vieillot.

507. *Icterus galbula* (Linn.). Baltimore Oriole; Golden Robin; Fire Bird; Hang Bird; Hang Nest; Pea Bird.

Plumage of adult male: whole of head, throat, upper back and neck black; wings black with white edgings to quills and greater coverts; tail feathers orange, the outer ones with a black band near middle and the inner ones black for outer half; lower back, lesser wing coverts, breast and belly reddish orange. Plumage of adult female: head and back with black mottlings; wings fuscous, the greater and median coverts white tipped; upper parts grayish orange, brighter on rump and tail; the middle tail feathers with blackish; below duller orange than the male, throat with a little black. Immature plumage: similar to female but more olive brown above; black on throat lacking. Wing 3.60; culmen 0.72; tarsus 0.91.

Geog. Dist.—Eastern North America from Nova Scotia and New Brunswick to the Gulf States, eastern Montana, Colorado and Texas; wintering in Mexico and Central America; accidental in Cuba and Shetland.

County Records.—Androscoggin; common summer resident, (Johnson). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, (Murch). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; seemingly only in the southern portion of the county, there common, (Knight). Piscataquis; not common, breeds, (Homer). Sagadahoc; rare, three specimens, (Spinney); common at Bath, (Knight). Somerset; common summer resident, (Morrell); not in northern county, (Knight). Waldo; common summer resident, (Knight). Washington; straggler, (Boardman). York; quite common summer resident, (Adams).

Near Bangor this species usually arrives from May ninth to May twelfth, and while nearly all are gone in late August, an

occasional individual remains until September tenth. As a common species it is confined to the more southern sections of the State, being a bird of the village elms and settled country roadside trees, more seldom found in the drooping elms along streams at some distance from civilization. It is a species gradually extending its range northward with the progress of civilization in Maine. Mr. Manly Hardy informs me that the species was not observed near Bangor until about 1860, though known in the Kennebec Valley many years previously. It is at the present writing known to occur at least north to Lincoln.

The male bird is very noisy during the time from his arrival until the nesting season is well advanced. He utters frequent whistled songs and snatches. A common song is "why-oh-oh-why" another "sweet-high-high-twet," still another "sheep-see-ye-sheep-see-ye-r-tweet-sweet" also a harsh grating "witter-witter-weet" or a "chee chee, chee." The vocabulary is quite varied and the softer whistled and not harsh calls are uttered in a sweet, whistled and rather mournful but still pleasing tone.

The nests are usually placed at the ends of the long drooping branches of the elms which line the village streets and country highways, but occasionally nests are placed in maples, locust, cottonwood, poplar or other hard wood trees and even in apple and pear trees in orchards. The usual site selected is an inaccessible one at the ends of the outermost branches. Here the pensile nest is attached to several slender branches. Many nests are composed entirely of horsehair, closely and nicely interwoven, others contain much twine, soft silken plant fibers, and even pieces of cloth and newspaper. Hair, tow, waste, and various similar material is used to line the bottom of the nest.

A nest before me is four and a quarter exteriorly by four interiorly in depth, and two and three quarters outside diameter by two and a half inches inside. The five eggs this nest contained measure 1.01 x 0.66, 1.00 x 0.65, 1.00 x 0.66, 0.99 x 0.66, 0.96 x 0.63. This was placed twenty feet up at the end

of the limbs of a maple tree. Nests in elms vary in elevation from the ground from about twenty to fifty feet. Nest building requires about fifteen days, the male being present and closely inspecting the work as it goes on and occasionally contributing a little material. The eggs are laid one each day until the complement of three to seven, usually four or five are laid. These are pale grayish white, lined chiefly about the larger end with streaks and blotches and pen lines of black, brown, lavender and gray. Incubation lasts about fifteen days, the female sitting very closely and rarely leaving the nest, being tended and fed frequently by her mate. The young leave the nest in about fifteen to eighteen days.

The food consists of beetles, caterpillars, soft fleshy larvae of various sorts, moths and similar insects gleaned from the foliage of the trees. They take dozens of tent caterpillars and *Vanessa antiopa* larvae daily, also canker worm larvae and occasionally I have seen them feeding on the soft slug-like larvae of the Colorado potato beetle which they were gleaning from the potato plants. Cherries and other small fruits are eaten to a lesser extent, but no great harm is done along this line.

508. *Icterus bullocki* (Swains.). Bullock's Oriole.

Plumage of adult male: forehead, line over eyes, ear coverts, sides, malar regions, under parts, rump and upper tail coverts orange yellow; pileum, hind neck, back, scapulars, lores, and middle of throat black; wing coverts partly black and partly orange; primaries and secondaries black, edged with white; tail orange with the middle feathers and tips of the others black. Plumage of adult female: yellowish olive on pileum, hind neck and tail; otherwise above olive grayish; sides of head, neck and chest yellowish; other under parts buffish white; wings dusky, the middle coverts white tipped, making a distinct band. Wing 4.00; culmen 0.75; tarsus 0.98.

Geog. Dist.—Western North America from western Texas and Lower California to British Columbia and Alberta, east to the Plains; accidental in Maine.

County Records.—Hancock; a specimen taken at Sorrento, some years ago, is now in the collection of Manly Hardy of Brewer, this being erroneously recorded by Mr. Brewster as from Bangor, (Brewster, Auk, 7, p. 92).

This is a common species in southern California, where I found it nesting commonly in the sycamores, willows and cottonwoods as well as the live oaks along the "so-called rivers" of that region and also in the eucalyptus trees of the city streets. Though as a rule not as tame, the habits, nests and eggs are very similar to those of the Baltimore Oriole. The call notes are very similar though harsher and I never heard the sweet, varied warblings and whistlings of the Baltimore Oriole emitted by this species.

Soft silken plant fibers, horsehair, cowhair and other similar materials are used in making the purse shaped, pendulous nest which is placed well out at the end of the drooping limbs, and often so low down in the uninhabited regions that it was possible to pull down the branches and see into the nest.

Four to six, usually five eggs are laid, a set, taken May 19 near Haskell, Texas, measuring 0.90 x 0.65, 0.90 x 0.66, 0.90 x 0.65, 0.91 x 0.65, 0.86 x 0.64, 0.93 x 0.66. This nest was composed of soft fibrous plant stems and grasses and was six inches high externally by five and a half internally, its external diameter at bottom four inches and the internal opening at the top two and a half inches.

In southern California both birds aid in nest building, the construction requiring about ten days, and an egg was laid daily until the set was completed. The eggs are pale grayish white, lined, spotted and streaked with brown, black, umber and lilac. The markings are most numerous at the larger end. Incubation was attended to by the females and required about fifteen days, the young leaving the nest in as many days more. Their food consisted of insects of the same general variety as is eaten by the Baltimore Oriole, and in addition a few small fruits, especially mulberries and cherries.

Genus EUPHAGUS Cassin.

509. *Euphagus carolinus* (Mull.). Rusty Blackbird;
Rusty Grackle.

Plumage of adult male in summer: glossy bluish black. Plumage of adult male in fall and winter: similar, the feathers above tipped with rusty and the feathers below with ochraceous. Plumage of females and immature: greenish black washed with brown; feathers above tipped with rusty and below with ochraceous. Wing 4.55; culmen 0.75; tail 3.60, feathers nearly equal length.

Geog. Dist.—Eastern North America west to Alaska and the Plains; breeding from northern Maine, northern New York and northern Michigan northward; accidental in Lower California.

County Records.—Androscoggin; fairly common migrant, (Johnson). Aroostook; summer resident of the wilder sections, especially the Woolastook Valley and tributaries, (Knight). Cumberland; migrant, (Mead). Franklin; rare summer resident, specimens shot late in June, (Swain); common summer resident, (Sweet). Hancock; fairly common fall migrant, (Mrs. W. H. Gardner); rare summer resident of Union River waters, (Knight). Kennebec; (Larrabee). Knox; migrant, (Rackliff). Oxford; (Nash). Penobscot; common migrant, rare summer resident, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common migrant, (Spinney). Somerset; common migrant, (Morrell); several pair seen near Rowe Pond in July and evidently breeding, (Knight). Waldo; common migrant, I think rarely summer resident, (Knight). Washington; common migrant and rare summer resident, (Boardman); a flock has been seen about Calais nearly all winter, (Boardman, J. M. O. S. 1899, p. 28).

In southern Maine the species occurs from March fifteenth through April and in the fall through September and October. In the wilder sections of northern Maine about the lakes and ponds it arrives about as soon as the ice has left in early May and remains until well into September. Small flocks of fifteen or twenty are often seen about Bangor in late March, sitting bunched up on a tree or feeding on the ground, uttering a shrill "queak" interspersed with frequent sounds like "chack" "cluck" and "chuck."

Their breeding grounds are along the streams and rivers of northern Maine and in the more isolated localities, and usually only one pair will be found in a given territory. About the dead water of a stream or on the shores of a pond near the mouth of a sluggish stream they are most frequently found. The nest is a bulky structure of moss, mud, small twigs, lined with fine grasses, sedges and moss. Four to five eggs are said to be the number usually laid, and these are described as

light bluish green spotted and blotched with chocolate, brown, drab and gray, especially about the larger end. The food consists largely of insects, about the same range in general being eaten as is eaten by the Red-wing Blackbirds.

Genus *QUISCALUS* Vieillot.

Subgenus *QUISCALUS*.

511b. *Quiscalus quiscula æneus* (Ridgw.). Bronzed Grackle; Crow Blackbird.

Plumage of adult male: back and rump bronzy green; head, neck and breast glossy metallic purple to iridescent steel blue; wing and tail bluish black, glossy; lower breast and belly dull black. Plumage of adult females and immature: duller and browner than that of the male and with few or no metallic reflections. Wing 5.60; culmen 1.20; tarsus 1.40.

Geog. Dist. — From the Alleghanies and southern New England to Newfoundland and Great Slave Lake, west to the eastern base of the Rocky Mountains, south to Louisiana and Texas; wintering in the lower Mississippi region, thence into Mexico, and occasional in winter in New England.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; common summer resident locally, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; rare summer resident, (Gardiner Branch). Knox; migrant, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; common summer resident, locally, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; rare, three specimens, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common local summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; (Adams).

Near Bangor the species arrives sometimes as early as March fifteenth, and usually by March thirtieth, but rarely even not until April fifteenth, and from then until about October twenty-sixth it may be found here as well as elsewhere throughout the State. They nest in the evergreen trees in a number of yards in Bangor and other similar spots about country dwellings elsewhere in the State, but their favorite habitat is in the flooded swampy lands about the slow streams, ponds and lakes as well as along many of the rivers. A large colony nest on

an island in the Stillwater River below Orono, though not as many as in former years when there were hundreds nesting.

The nest is a large bulky mass of coarse grasses and sedges, weed stems and similar material, cupped often with mud and lined with grass or a little hair. They generally nest in scattered colonies. The nest is variously situated, on the University of Maine campus being generally placed in the thick branches of spruce, fir or pine at heights of fifteen to thirty feet. Along the Stillwater River nests are often placed in elms and maples at forty to fifty feet elevation. The top of a broken off stub is often used, or a nest is built in a hollow tree or old Flicker's hole in a stub.

On the island in the Stillwater River below Orono I found nests in low willow and alder bushes in thickets, and on the ground as well as at various heights in trees. In fact their choice of a nesting site is extremely variable. A nest taken from an elm tree thirty feet from the ground, at Orono, June 21, 1892, was four inches high outside by two and a half deep internally, its external diameter was six and its internal diameter three and a half inches.

The eggs measure 1.10 x 0.86, 1.10 x 0.86, 1.06 x 0.87, 1.08 x 0.86, 1.08 x 0.85, and these were almost certainly the third set laid by the birds that season. The general date for fresh eggs is about the middle to the last of May. A nest found at Orono, May 27, 1896, on an island in the Stillwater River was placed in the fork made by two large trunks of a maple tree at two feet from the ground. The eggs measure 1.28 x 0.82, 1.23 x 0.85, 1.20 x 0.81, 1.21 x 0.83. At this date nearly all the nests contained eggs though a few had newly hatched young in them. From three to seven eggs, usually five are laid. These are pale greenish white to rusty brown colored, very varyingly and profusely spotted, blotched, lined and scrawled with black, rusty brown, dark brown and lavender. Some eggs are chiefly spotted at the larger end, others over the entire surface, and they show a great variety of coloration and markings.

Both birds build the nest and share the task of incubation and feeding the young. Nest building requires from six days to two weeks according to the weather and other circumstances. An egg is laid each day, incubation commences when part of the set has been laid and the eggs hatch in thirteen to sixteen days, the time varying according to the weather, degree of pertinacity with which the bird sits, and other factors. Some birds leave their eggs for hours at a time during the day while others incubate very closely, one relieving the other.

The parents are very solicitous and noisy when the nests contain young, and resent too close intrusion by noisy chackings and chirrings even when the nest is not completed. Only one brood is reared. Their common call is "chack" or a rasping chirp varying in intensity to indicate alarm or satisfaction. In the mating season it is a very common sight to see a glossy male swell out his breast as if about to burst and with a seemingly great effort utter a squeaky call sounding like the squeaking of a heavy ungreased wheel of a dray, and when dozens are competing thus with one another and the "chacks" and "cheeups" of the females are added the volume of sound fills the air. Blackbirds are always noisy when in flocks, but more so in spring seemingly than at any other season.

When one is alone, seeking food or bent on mischief it is silent. I never see a sleek, glossy Grackle walking silently along the shore of a pond or river, going where there is just space enough to get dry shod between the water's edge and the over hanging bushes without wishing to follow and see what villainy it is concocting. Often they discover some small bird's nest as a Sparrow's in the bushes overhead, and speedily hop up into the bushes and devour the contents, be it eggs or young. At other times they discover worms, insects, crawfish or other edible articles along the shore which they as eagerly devour.

The food of the Grackle consists largely of beetles, grubs, cutworms, caterpillars, larvae of various sorts, grasshoppers,

crickets, etc., but they destroy as many nests and eggs of small birds as they are able to locate. When the corn is in milk in late summer or when the peas are at their best the Grackles are very apt to be on hand to get their share, and many of the wild fruits and berries also fall to their lot. The fact however remains that they eat large quantities of injurious insects, and that their chief diet is insects of the more injurious sorts, so that on the whole the species is beneficial, doing more good than harm.

Family FRINGILLIDÆ. Finches, Sparrows, etc.

Key to the species of FRINGILLIDÆ.

- A. Under parts *distinctly* streaked.
 - 1. Base of tail yellow. Pine Siskin.
 - 2. Base of tail not yellow.
 - §. Outer tail feathers partly or wholly white.
 - ? Lesser wing coverts rufous; hind toe shorter than bill from nostril to tip. (bird found spring to fall) Vesper Sparrow.
 - ?? Lesser wing coverts not rufous; hind toe longer than bill from nostril to tip. (bird found in late fall and winter) Lapland Longspur.
 - §§. Outer tail feathers without white.
 - ** Outer tail feathers much shorter than middle pair.
 - a¹. Crown with central ashy blue stripe and of different color from back or buffy line *over* the eye.
 - b¹. Breast and sides pale ochraceous buff, *distinctly* streaked with *black*. Sharp-tailed Sparrow.
 - b². Breast and sides darker, not distinctly streaked with *black*.
 - c¹. Breast and sides deep ochraceous buff, unstreaked or only slightly streaked. Nelson's Sparrow.
 - c². Breast and sides cream buff, streaked with grayish. Acadian Sharp-tailed Sparrow.
 - a². Crown without central ashy blue stripe, same color as back; no buffy line *over* eye.
 - b¹. Bend of wing and spot in front of eye yellow. Seaside Sparrow.

Foot Note. Though Mr. Smith records the Boat-tailed Grackle as seen by him at Second Lake, Washington County, no specimens were secured. It must have been a case of mistaken identity as the species is not a bird of Maine or even of New England.

- b². No yellow on bend of wing or before eye.
 - c¹. Breast crossed by broad buffy band. Lincoln's Sparrow.
 - c². Breast not crossed by buffy band; a darkish spot at middle of breast usually. Song Sparrow.
- ** Outer tail feathers scarcely or not at all shorter than middle pair.
 - a¹. Yellow either before eye or on bend of wing or under wing coverts yellow.
 - b¹. Under wing coverts yellow. Rose-breasted Grosbeak. (female).
 - b². Under wing coverts not yellow.
 - c¹. Breast washed with yellow. Dickcissel.
 - c². Breast not washed with yellow.
 - d¹. Throat contrasted to breast in color, white. White-throated Sparrow.
 - d². Throat not contrasted to breast in color.
 - e¹. Crown with central buffy line; crown feathers black, bordered by chestnut brown; wing under 2.90. Savanna Sparrow.
 - e². Crown feathers with a small black center, widely bordered with brownish gray and cinnamon brown; wing over 2.90. Ipswich Sparrow.
 - a². No yellow either before eye, on bend of wing or under wing coverts.
 - b¹. Crown with bright red cap.
 - c¹. Rump pure white, unstreaked; flanks only slightly or not at all streaked. Hoary Redpoll.
 - c². Rump and sides distinctly streaked with blackish.
 - d¹. Length over 5.25; bill short, thick, not very acute; sides rather broadly streaked. Greater Redpoll.
 - d². Length under 5.25; bill acute, longer; use your imagination well and you will *think* you can see a difference in the two following when you have them side by side.
 - e¹. Length 4.50 to 5.00; bill smaller. Redpoll.
 - e². Length 5.00 to 5.25; bill larger; use imagination liberally and you have Holbæll's Redpoll.
 - b². Crown without red cap and about same color as back.
 - c¹. Bill with the mandibles crossed; rump yellow.
 - d¹. Wing with white bars. White-winged Crossbill. (female or immature).
 - d². Wing not white barred. American Crossbill. (female or immature).
 - c². Bill with mandibles not crossed.
 - d¹. Rump reddish, brighter than back; wing over 3.25. Fox Sparrow.

- d². Rump not reddish, same color as back; wing under 3.25.
- e¹. Outer tail feathers longer than middle pair; back grayish brown, streaked or unstreaked; first primary shorter than second. Purple Finch. (female or immature).
- e². Outer tail feathers not longer than middle pair.
 - f¹. Breast with buff band across it. Lincoln's Sparrow.
 - f². Breast not buffy banded.
 - g¹. First primary shorter than second; upper parts streaked black and reddish brown. Song Sparrow.
 - g². First primary not shorter than second; back brownish ashy, streaked with brownish; a pale streak over the eye. Ipswich Sparrow.
- B. Under parts unstreaked.
 - *. Claw of hind toe always as long as subtending toe, usually longer. Chestnut-collared Longspur.
 - ** . Claw of hind toe shorter than its subtending claw.
 - 1. No red in under parts.
 - §. Back distinctly streaked.
 - ?. Tail with spots, bars or patches of white.
 - a¹. Bend of wing yellow; wing under 3.00; under parts not pure white; tail feathers narrow and sharply pointed; summer birds. Grasshopper Sparrow.
 - a². Bend of wing not yellow; wing over 4.00; under parts white or slightly washed with rusty; winter birds. Snowflake.
 - ?? . Tail without spots, bars or patches of white.
 - a¹. Bend of wing yellow.
 - b¹. Tail feathers narrow, pointed; tail under 2.20.
 - c¹. Crown with bluish gray line through its center; cheeks and breast ochraceous buff. Nelson's Sparrow.
 - c². Crown with buff line through center. Grasshopper Sparrow.
 - b². Tail feathers not narrow and pointed; tail over 2.20.
 - c¹. Throat white and distinctly contrasted with the gray breast; a yellow line over the eye. White-throated Sparrow.
 - c². Throat with black spot or breast yellow, or both. Dickcissel.
 - a². Bend of wing not yellow.
 - b¹. Crown with some black streaks or spots.

- c¹. Bill with mandibles crossed; crown grayish. American Crossbill. (female or immature).
- c². Bill not crossed.
 - d¹. Center of crown white, bordered by black; wing bars white. White-crowned Sparrow.
 - d². Center of crown not white.
 - e¹. Crown with some reddish brown; middle tail feathers shorter than outer ones; wing bars buffy. Chipping Sparrow. (immature).
 - e². Crown chestnut streaked; middle tail feathers longer than outer ones. Swamp Sparrow. (immature).
- b². Crown without black streaks or spots.
 - c¹. Crown reddish brown, the feathers sometimes tipped with ashy or brownish.
 - d¹. Outer tail feathers shorter than middle ones; upper tail coverts and most of tail feathers rufous. Swamp Sparrow.
 - d². Outer tail feathers not shorter than middle ones; the upper tail coverts and tail feathers not rufous.
 - e¹. Wing with two *distinct white* bands; an indistinct black spot in center of breast. Tree Sparrow.
 - e². Wing without distinct white bands.
 - f¹. Wing longer than tail; rump slaty gray. Chipping Sparrow.
 - f². Wing shorter than or at most only as long as tail; rump brownish ashy. Field Sparrow.
 - c². Crown not reddish brown, but mixed grayish brown with rufous, ashy or slate.
 - d¹. Wing under 2.75; back rufous, streaked with black. Field Sparrow.
 - d². Wing over 2.75.
 - e¹. Crown with a central stripe of grayish brown bordered by chestnut rufous. White-crowned Sparrow.
 - e². Crown one color.
 - f¹. Throat black. English Sparrow. (male).
 - f². Throat not black. English Sparrow. (female).
- §§. Back not streaked.
 - ?. Tail with large spots, bars or patches of white.
 - a¹. Under parts pure white. Snowflake.
 - a². Under parts not pure white.
 - b¹. Under parts black or brown or slaty color, and white.
 - c¹. Breast slaty color; sides same or brownish. Slate-colored Junco.

- c². Breast black or brown; sides rufous. Towhee.
- b². Under parts yellowish or ashy.
 - c¹. Bird as large as Robin, length about 8.00; wing over 4.00; bill stout, prominent, *yellow* or greenish yellow. Evening Grosbeak.
 - c². Small bird; length about 5.00 wing under 3.00.
 - d¹. Cap black; body yellow; wings and tail black. American Goldfinch. (male).
 - d². No black cap; back brown; wings and tail black; whitish below and yellowish on throat. American Goldfinch. (female, immature and winter male).
- ?? Tail without large white spots, bars or patches.
 - a¹. Back brown, ashy or slate.
 - b¹. Wing under 3.00.
 - c¹. Yellow spot before eye and on bend of wing. Seaside Sparrow.
 - c². No yellow on wing; lower parts whitish. Indigo Bunting. (female).
 - b². Wing over 3.00.
 - c¹. Head and rump yellowish or reddish; prominent white wing bars. Pine Grosbeak. (female and immature).
 - c². Head and rump not yellowish; no *white* wing bars; under parts brownish buff. Blue Grosbeak. (female).
 - a². Back not brown, ashy or slate.
 - b¹. Back blue or brownish blue.
 - c¹. Bill with crossed mandibles.
 - d¹. With white wing bars. White winged Crossbill. (female and immature).
 - d². No white wing bars. American Crossbill. (female and immature).
 - c². Bill without crossed mandibles.
 - d¹. Back and under parts slaty gray; wing bars white; bill black. Pine Grosbeak. (female and immature).
 - d². Under parts and scapulars, forehead and rump yellow or brownish yellow; bill yellow or greenish yellow. Evening Grosbeak.
- 2. Under parts red.
 - §. Wing coverts not white-tipped.
 - ? Throat black or blackish; wings and tail red; body reddish or olive. Cardinal.
 - ?? Throat red; more or less red above and below.
 - a¹. Bill with mandibles crossed. American Crossbill. (male adult).

- a². Bill not crossed. Purple Finch. (male adult).
- §§. Wing coverts white tipped, making a white bar in wing.
 - ? . Red only below and this confined to breast and under wing coverts, one or the other or both; throat and back black. Rose-breasted Grosbeak. (male).
 - ?? . Some red above as well as below.
 - a¹. Red above confined to crown and forehead, or rarely also on rump; wing under 3.25.
 - b¹. Rump pure white, unstreaked; flanks not at all or only slightly streaked. Hoary Redpoll. (adult male).
 - b². Rump and sides distinctly streaked with blackish.
 - c¹. Length over 5.25; bill short, thick, not very acute; sides rather broadly streaked. Greater Redpoll.
 - c . Length under 5.25; bill acute, longer; use your imagination well and you will *think* you can see a difference in the two following when you have them side by side.
 - d¹. Length 4.50 to 5.00; bill smaller. Redpoll. (adult male).
 - d². Length 5.00 to 5.25; bill larger; use imagination liberally and you have Holboell's Redpoll.
 - a². Red covering more or less of the entire upper parts; wing over 3.25.
 - b¹. Bill with mandibles crossed. White-winged Crossbill. (adult male).
 - b². Bill not crossed. Pine Grosbeak. (adult male).

Genus HESPERIPHONA Bonaparte.

514. *Hesperiphona vespertina* (Coop.). Evening Grosbeak.

Plumage of adult male: forehead and rump yellow; ends of secondaries and their coverts white; wings, tail, crown, belly and scapulars black; otherwise deep olivaceous. Plumage of adult female: brownish gray above, tinged with yellow at back of head and nape; primaries basally and the secondaries edged with white; tail feathers white terminally on inner web; upper tail coverts white tipped; wing, upper tail coverts and tail otherwise black; below light brownish gray. Immature plumage: more brownish than that of adult female; bill brownish. Bill of adults yellow. Wing 4.40; culmen 0.76.

Geog. Dist. — Interior North America, from Manitoba northward; in winter southward to the upper Mississippi Valley, Michigan, Ohio, Ontario; casual in New York and New England.

County Records.—Androscoggin; a male taken on the Bates College campus, January 10, 1890, (Walter, B. A. C., p. 14). Oxford; I mounted one taken

at Fryeburg, (Nash). Penobscot; an adult male taken at Orono, February 28, 1890, (Fernald, O. & O. 15, p. 46); one seen by me which was shot in Brewer in the winter of 1889-'90, (Crosby); one taken at Bangor, March 18, 1890, while a companion to it had escaped, (Shepherd, Oologist, May, 1890, p. 86).

This is distinctly a species of the north and middle west, and moreover even in its home rather sporadic and uncertain, sometimes found in abundance, at other times not seen, even in favorable situations. In the months of December, 1889, and more particularly in January, February and March, 1890, these birds visited the Northern Atlantic States in a regular sporadic irruption, being reported from New York and practically all of the New England States. They were shot in various localities where they appeared in small flocks of ten to fifteen or in twos or threes.

They feed on various buds such as maple, elm, elder, apple and other tree buds, the berries of mountain ash, crabapples and similar fruits, and various seeds of trees and weeds. In fact they are fully as variable in diet as the Pine Grosbeak and eat about the same manner of material. They are said to be fully as tame and unsophisticated as the Pine Grosbeak.

Chapman says relative to their notes:—"Their notes are described by different observers as a shrill "cheepy-teet" and a froglike "peep," while one writer remarks that the males have a single metallic cry like the note of a trumpet, and the females a loud chattering like the Cherry Birds. Their song is given as a wandering, jerky warble, beginning low, suddenly increasing in power, and as suddenly ceasing, as though the singer were out of breath." (Chapman, B. E. N. A. p. 280.)

I am not aware that eggs of the Evening Grosbeak have been found, but eggs of the subspecies, Western Evening Grosbeak, have been recorded and do not differ in all probability from its eastern form, the birds being almost indistinguishable except to an expert. The nest of the western bird is said to consist of twigs and fine bark, lined with fine rootlets and hair and to be placed in trees at various heights, usually

ten to forty feet. The eggs are said to resemble those of the Black-headed Grosbeak, being pale greenish blue, blotched and spotted with pale brown, umber and black.

Genus PINICOLA Vieillot.

515. *Pinicola enucleator leucura* (Müller). Pine Grosbeak.

Plumage of adult male: the head, throat, breast, sides, back and rump, all or part of these edged and washed with beautiful rose red; wings fuscous, the primaries often narrowly edged on the outer web with yellowish brown; wing coverts edged with white, forming two distinct bars; tail fuscous, the feathers often edged very narrowly with yellowish brown; otherwise on back and breast and belly where not red, slaty gray. Plumage of adult female: wings and tail as in male; general color otherwise slaty gray save for the crown, upper tail coverts and breast which are washed with dull olive yellow. Plumage of immature male: similar in general to the female but washed on rump, breast and crown with a deeper, more orange tinged or reddish shade of yellow. Wing 4.70; culmen 0.56; tarsus 0.90.

Geog. Dist.—Northern North America east of the Rocky Mountains, ranging north to Arctic regions, range not well distinguished from that of the several recognized western subspecies; breeding from northern Maine northward through Labrador and westward; in winter ranging southward to the Middle Atlantic and northern tier of western states sporadically.

County Records.—Androscoggin; common winter visitant, (Johnson). Aroostook; sporadically common in winter, rare resident, breeding in the wilder sections of the Woolastook Valley and probably elsewhere in the county, (Knight). Cumberland; common winter migrant, (Mead). Franklin; common winter resident, (Swain). Hancock; winter visitor which is sporadically common, very rare in summer in the wildest reaches of Otis and Union River country, (Knight). Kennebec; common winter visitor, (Gardiner Branch). Knox; winter, (Rackliff). Oxford; common in winter, rare in summer; in 1882 I saw a pair of old Pine Grosbeaks with four young just out of the nest in the mountains at Stow, (Nash). Penobscot; always present in winter, some winters sporadically abundant, other winters only a few, also very rare summer resident of the wilderness, (Knight). Piscataquis; common winter visitor, (Homer). Sagadahoc; irregularly common winter visitor, (Spinney). Somerset; irregularly common winter visitor, (Morrell). found breeding near Jackman, (Miss Maddox). Waldo; sporadic winter visitor of variable abundance, (Knight). Washington; common in winter, rare summer resident, (Boardman). York; regular winter visitant, (Adams).

The Pine Grosbeak is a bird of erratic tendencies to a great extent, its comings and goings in winter being seemingly to a great extent dependent upon the food supply in its northern

home. It is evident that cold weather and storms have nothing to do with their presence in Maine, as they are often very few in number during the most severe winters, while mild winters sometimes they are present by hundreds.

They occur everywhere throughout the State at seasons, in flocks of two or three, more often ten or a dozen, to sometimes flocks of a hundred or more. Though found in the southern counties at variable dates, from sometimes as early as November first to as late as the last of March or even as late as April fifteenth, (Norton and Knight at Scarboro,) their more usual time of occurrence is in the winter months.

In northern Maine occasional individuals are seen throughout the summer under conditions which indicate they are nesting, but the species more generally occurs from November until April in numbers. Mr. Brewster records a young male shot at Upton, August 27, 1874, which is so early a date as to indicate their breeding near there. The species has also been observed by me in Somerset, northern Penobscot, Hancock, and Aroostook Counties under circumstances that indicate their breeding there. They have also been reported in the mountains of Franklin County in summer.

Fortunately we have very conclusive and definite information to prove they do nest in Maine. Miss Marie Kaizer Maddox of Ellsworth Falls, writes as follows:— "Four years ago in the month of May I found a Pine Grosbeak's nest about seven miles north of Jackman, near a sporting camp at Hale Pond. The nest was not in thick woods but in open pasture near the Canada Road. It was woven of twigs and moss, lined with rabbit's hair and contained four pale-green eggs, flecked with purple and hardly to be distinguished from the moss itself. This nest was in a fir tree about four feet from the ground. It was neatly woven but much less substantial than most nests of that size. Probably the fact that the region is three thousand feet above sea level accounts for a nest in that latitude.

When the young hatched I fed them with several kinds of fruit and seeds, taking care not to alarm the mother bird and giving but a small quantity each day. There were two males and two females in this nest for their difference in plumage was well marked when they began to use their wings."

In answer to a letter written to Miss Maddox asking for particulars regarding the above notes which appeared in a local paper she writes me as follows—"In reply to your inquiry for further information about the Grosbeak's nest I will say that by searching some old records kept while laboring at the Mission I find that the incubation was completed on May 27, being the thirteenth day after the fourth and last egg of the clutch appeared in the nest. The female bird as far as I could learn did all the sitting. Several times I surprised the male bringing her food and saw her leave the nest and receive it from him, near but never on the nest. Both parent birds fed the fledglings after they left the nest, which occurred the twentieth day after they were hatched.

The male sang mornings during incubation, but not near the nest, his favorite perch being the top of a cedar tree several rods away. Sometimes after the young appeared he would alight on the same perch and utter a few soft clear notes, but his songs were fewer and shorter for the young seemed always hungry. These birds were much less timid than our native birds. I could sit near their nest for hours without their taking alarm if I kept still. I never drove them from their nest to examine it, but watched my chance when the female went to stretch her wings, as she did each morning during incubation." Judging from Miss Maddox's account and from my own experience with captive birds of this species the eggs are laid in May or June.

In winter the favorite food seems to be the pulp and seeds of crab-apples and mountain ash, and winters when they are common a flock of ten or a dozen can usually be found feasting on the fruit of these trees during the warmer portions of the

day. They seem to proceed more or less by rule, arriving generally from a certain direction, feeding in a general circuit covering certain yards, and finally at the end of each day going away to the same general locality to roost.

Sometimes for a month the birds will follow this general routine daily, visiting the same places at about the same hours until the food is exhausted. They also eat buds of the maple, elm, birch, apple, mountain ash, elder, pear, poplar, willow and other native trees, and the seeds of birch, hackmatack, pine, fir, spruce and in general almost any of the grass and weed seeds at a pinch. Their prime choice in the free state is seemingly crab-apples, mountain ash fruit, pine seeds and maple buds. My captive birds eagerly ate flies, beetles, angle worms, caterpillars and insects of other kinds.

The calls uttered by the birds are quite variable, each having its accepted meaning. For example a peculiar querulous whistled "caree" or "c-r-r-r-u" or "ca-r-a-r" is evidently note of warning, for when one of a flock of feeding birds utters it all cease feeding and stand transfixed, looking cautiously about for danger or suddenly taking flight. I have imitated this cry, both when near wild birds and with my own tame birds with always the same result, their repeating the call and looking about for danger. Another call sounding much like "pee-ah" is uttered by the birds when in their undulating flight or when those feeding are calling to others of their kind flying overhead, being evidently a means of calling others to a locality or of announcing their whereabouts. A variation of this call often uttered when a bird has just alighted, it is seemingly always a male that utters this particular call, sounds like a warbled "pee-ah-pree-pu," also designed to call others to the spot. When feeding they keep up a low whistled conversation among themselves.

Though it is a pleasure to watch a flock of these warmly clothed, plump, robust birds feeding cheerfully on a cold winter morning, the real pleasure of knowing them has not been reached

until the song of the male has been heard. Soft, tender, ventriloquial and caressing at times, at others rising clear and loud but always full of trills and warbles, the song of the Pine Grosbeak easily places it on equal footing with any of our song birds.

Again, tame though the birds always are, one never knows the real loveliness of their character until he has studied them close at hand for a protracted period as was my privilege for about seven years. In captivity the male sings almost continuously during the morning hours and more or less during the whole day in the spring months, and though not quite as full of music at other seasons there is hardly a day in the year but that my captive birds sang more or less. A brief account of my experience with some captive birds is reprinted herewith, being taken from *The Auk* for January, 1896.

"The winter of 1892-93 will be long remembered by Maine ornithologists on account of the great number of Pine Grosbeaks (*Pinicola enucleator*) which visited this State. November 16, 1892, I noticed two or three individuals feeding on seeds of the white ash near Orono, Me. December 25 a flock of about two hundred individuals appeared in the yard of a friend in Bangor and began to feed upon the seeds of crab-apples of which a large quantity remained on the leafless trees in his yard. He at once sent word to me, and I was soon on the spot. I determined to catch a pair of the birds and see if they could be induced to breed in captivity.

A horse hair slip noose was speedily arranged at the end of a bean pole, and with this crude apparatus I essayed to capture the birds, which were very tame. They would sit quietly engaged in feeding, while I slipped the noose over one's head and hauled it from its perch on the tree. The remainder of the flock did not seem to take any notice of the queer antics of their captured comrade, which uttered loud, harsh cries when handled while the noose was being removed from its neck. In this way about twenty females and young males were cap-

tured, but the handsome adult males were more wary and remained near the top of the tree, so that it was impossible to capture any of them.

After a careful scrutiny of the captives, I selected two likely looking ones which by sheer luck turned out to be a pair. My friend also selected a couple of birds, and the remainder were set free. My pair of birds were placed in a large cage in our kitchen, where they would become accustomed to seeing persons near them, and they quickly became very tame. The next day after their capture, the male began to sing in a low ventriloquial voice which seemed to come from an entirely opposite direction from where he was.

In a few days they would eagerly take apple and hemp seed from my hand, and very soon I would allow them to come out of their cage and fly about the room. When I desired to get them into their cage again, a few seeds placed near the door at once enticed them within.

The male quickly assumed the ascendancy, and did not allow the female to partake of any proffered dainties until his own appetite was satisfied. The second week in May he showed indications of pairing, and nesting material was put in the cage. Both birds would carry this around the cage in their beaks, but did not seem to know how to begin to build a nest. May 30, the male was found dead in the cage. Notwithstanding this, the female continued preparing to lay, and the morning of June 10 an egg was found in the bottom of the cage. June 11 a second and last egg of the set was laid. They were of a greenish blue color, spotted with black and lilac. The spots were thickest at the larger end where they tended to become confluent and form a wreath. The eggs measured 1.00 x 0.68, 1.02 x 0.64 inches respectively.

The next winter, 1893-94, no Grosbeaks were observed in this vicinity, and so I was disappointed in getting a mate for my bird. The last of May, 1894, she showed signs of desiring to build a nest. An old nest of the Loggerhead Shrike

was placed in a box in her cage, and she at once occupied herself in tearing it to pieces and attempting in a crude way to build a nest. On June 9, 14, 17, 22 and 23 she deposited eggs which exhibit the following dimensions: 0.90 x 0.69, 0.94 x 0.70, 0.95 x 0.68, 0.90 x 0.65 and 0.90 x 0.69. On completion of this set she desired to incubate, acting very much like a sitting hen. In July she again began to prepare a nest, and on July 17 and 18 she laid eggs which measure 0.81 x 0.64 and 0.86 x 0.62.

January 17, 1895, a few Grosbeaks were observed feeding on some sumach berries in a small grove near Bangor. Feb. 2 a small flock of about twenty visited a crab-apple tree in a neighbor's garden, and, although they were very wild, I finally managed to capture one which proved to be a young male. He was at once introduced to the captive female, but the two developed a strong antipathy to each other, and a fierce fight ensued, so that I was obliged to place them in separate cages.

May 20 the female began to build a nest, and I again tried to mate the birds, but they at once began to attack each other, so I was obliged to give up all hopes of their mating.

On May 28, 29, and June 5, 6, and 7 eggs were deposited which measure 0.92 x 0.69, 0.83 x 0.66, 0.93 x 0.71, 0.88 x 0.70, and 0.88 x 0.69 inches, and the female at once desired to incubate. June 11 the bird began to construct another nest and on June 14, 15, 22, and 24 she again laid. The eggs measure 0.99 x 0.70, 0.86 x 0.67, 0.95 x 0.70, 0.64 x 0.57. inches. The last egg laid was very small and contained no yolk. The bird now ceased laying until July, when on July 10, 11, and 12 she laid eggs measuring 0.93 x 0.69, 0.94 x 0.68 and 0.88 x 0.69 inches. I now supposed that she was through with her remarkable production of eggs, but to my astonishment on July 25, 26, and 27 she again laid, the eggs measuring 0.93 x 0.67, 0.89 x 0.64, 0.90 x 0.65 respectively. This ended the production of eggs for this year. In August I tried to put the male in the cage with the female, and this

time they managed to get along without quarreling, and have been kept in one cage ever since.

It was very interesting to observe the moulting of the male and see him gradually take on the adult plumage. July 20 a few orange colored feathers could be observed on his head near the base of the bill; these gradually grew until on August 1 his drab colored head feathers were all replaced by orange colored ones. July 25 a few orange feathers were noted on his throat, and these grew and replaced the old ones until on September 5 the moult was completed. The feathers of the head, throat, etc., are a peculiar orange color instead of the beautiful red hue which characterizes the wild birds of the same sex.

Genus CARPODACUS Kaup.

517. *Carpodacus purpureus* (Gmel.). Purple Finch.

Plumage of adult male: wings and tail fuscous, narrowly edged on outer webs of feathers with rose red; belly white or whitish; back brownish; head, throat, rump, breast, back, sides and belly more or less suffused, edged and washed with rose red. In captive males after the first moult the rose red is replaced by orange. Plumage of adult females: above grayish brown, streaked with darkish or black; whitish or white below, much streaked with fuscous. Immature plumage: very similar to that of female. In all plumages the outer tail feathers are longest; there is a tuft of bristles over the nostrils. Wing 3.20; bill 0.40; tail 2.32.

Geog. Dist.—Eastern North America from the Plains to the Atlantic; breeds from Long Island and Minnesota northward; wintering from the northern boundary of the United States to the Gulf of Mexico.

County Records.—Androscoggin; common summer resident, a few remain here some winters, (Johnson). Aroostook; locally common summer resident north to the Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead); a few wintered about Westbrook and Gorham through 1891-'92, (Norton). Franklin; common summer resident, (Swain); resident sometimes, (Sweet). Hancock; occurs every month, (Mrs. W. H. Gardner); commonest as summer resident, (Knight). Kennebec; rare resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; locally common summer and rare winter resident, (Knight). Piscataquis; breeds, resident mild winters, (Homer). Sagadahoc; common, except in midwinter, (Spinney). Somerset; quite common summer resident, (Morrell). Waldo; locally common in summer, a few in winter,

(Knight). Washington; abundant, breeds, (Boardman); abundant summer, a few in winter, (Clark). York; common migrant, may breed, (Adams).

Though resident locally throughout the State, the species occurs in greatest numbers from late spring to fall and is more properly a summer resident of most sections of Maine, being found more generally from April through October. The female utters a few short muffled call notes, while the male in addition is a sweet voiced warbler, especially in spring and early summer at which seasons he may be found perched on some prominent tree top keeping up an incessant, pleasing, warbling song, at times uttered with swelling breast as if he were about to burst from sheer inability to express the feelings welling forth from within. The general lay of the song is Pine-Grosbeak-like in character, but distinctly inferior to the Grosbeak's song.

Except in the nesting season the Purple Finch leads a roving life, appearing here and there with sweeping flight as if they were care-free, often solitary, again in twos or threes, uttering their short call note which is quite characteristic. During the nesting season they are more settled for a time, remaining in various localities in gardens and orchards, wooded pastures and along streams, some being very sociable and others preferring the wilderness.

The nests are generally placed in evergreen trees, at various heights from ten to forty feet from the ground, usually near Bangor nesting in the top of a small pasture spruce or fir tree at about twelve to fifteen feet elevation, the nest being well concealed in the thick top. A nest found at Hermon, June 4, 1905, is typical, being placed in the top of a small fir tree in a dense bunch near the top, about twelve feet from the ground in a pasture. This nest was built on a foundation of numerous small spruce and fir twigs, lined with fine roots, lichens and horsehair. Its height outside was three inches, the depth inside one and a quarter, the external diameter six and the internal diameter two and a quarter inches. The female left the nest when the tree was hit a light blow,

otherwise the nest could not have been located. The five eggs measure 0.82×0.60 , 0.81×0.59 , 0.83×0.60 , 0.80×0.60 , 0.80×0.57 . Four to six, usually five eggs are laid, these are light blue or slightly greenish blue, spotted about the larger end with dark brown, blackish and fuscous.

Both male and female assist in building the nest, but I have only once caught the male assisting in the task of incubation, and then he was perched on the eggs half standing and literally bursting with melody. Probably the female would prefer to get along without such aid which might endanger the safety of the eggs if the songster forgot himself too much while expressing his feelings. The male frequently feeds the female while she is incubating, and when not so engaged is perched on the top of some near by tree singing his best.

Incubation requires about thirteen days and the young leave in fourteen days more. Both parents feed them for a considerable while after they have left the nest. As to the food of the Purple Finch, the species is primarily a seed eater during the winter and spring, eating all sorts of weed and grass seeds, also to a lesser extent a few buds of apple, maple and birch as well as other tree buds. In late spring they eat some insects, such as beetles, green caterpillars and small larvae of various sorts. In summer they are fruit eaters to quite an extent, partaking of strawberries, raspberries, blackberries, cherries, both wild and cultivated and many other fruits. They seem to relish the fruit of the dogwoods, elders and viburnums very much.

Genus LOXIA Linnæus.

521. *Loxia curvirostra minor* (Brehm). American Cross-bill.

Plumage of adult male: wings and tail fuscous; otherwise more or less dull reddish with local brownish tinges, the prevailing color being reddish. Plumage of immature males: wings and tail fuscous; otherwise all over a

FOOT NOTE—(*Amadina rubronigra*, an African Finch, once taken in Maine, is most certainly an escaped cage bird, (Allen, B. N. O. C. 5, p. 120).

mixture of dull red, bright yellow, and greenish or brownish, the brownish prevailing on the back, the yellowish more restricted to throat, breast and rump and mixed with reddish. Plumage of female: wings and tail fuscous; rump yellowish; breast, sides, back and head more or less olive greenish to yellowish; many feathers of head and back with dark or blackish centers; belly whitish; under tail coverts fuscous, edged with whitish. Bill crossed in all plumages after the birds are a month old, sometimes the lower mandible passing to the right and again to the left of the upper one. Wing 3.45; culmen 0.60; tarsus 0.60.

Geog. Dist.—Northern portions of Eastern North America; breeding in the Alleghany Mountains south to South Carolina, and from northern New York and Maine northward; wintering sporadically and irregularly from the northern portions of their range southward occasionally to the Gulf States.

County Records.—Androscoggin; fairly common winter visitor, (Johnson). Aroostook; common resident, locally and sporadically, especially about the lumber camps and in the Woolastook Valley, (Knight). Cumberland; common winter migrant, (Mead); I have seen it near Portland in June and August, (Knight); found on Little John's Island, Casco Bay, August 21, 1897, seemingly engaged in breeding duties, (Norton). Franklin; common resident, (Richards). Hancock; common in winter and I have observed it on the wooded islands of the coast in May, June, July and August, (Knight). Kennebec; very rare resident, (Powers). Knox; winter, (Rackliff). Oxford; breeds, I found a nest in a very high spruce tree in June, 1890, (Nash). Penobscot; irregularly abundant, I have seen the species every month in the year and have seen young recently out of the nest in March, April, May, July and August, (Knight). Piscataquis; common in winter, (Homer). Sagadahoc; irregularly common winter visitant, (Spinney). Somerset; irregular winter visitant, (Morrell); resident, breeds beyond question (Knight). Waldo; seen in May, (Knight). Washington; uncertain, some winters abundant, breeds in winter (Boardman). York; migrant, (Adams).

ECCENTRIC; ERRATIC; IRREGULARLY SPORADIC; in these few words we may write the entire history of the Crossbills. As a resident species it occurs more or less commonly in the northern and eastern portions of the State, in the wilder portions of those sections within the Canadian Fauna and is likely locally to appear almost anywhere in the State regardless of season, though more often perhaps noticed in winter outside of the breeding range. These birds usually may be found about the lumber camps in winter in small flocks of ten to fifteen individuals or sometimes in lesser or greater numbers, even up to flocks of a hundred or more. They are

tame and unsuspicious as a general rule, feeding about the camps on such matter as may be thrown out.

A very dear friend, Wade Fogg, while in the woods for his health made a number of observations regarding them and wrote me shortly before his death giving the results of his observations which are given herewith. He writes:—"American Crossbills are very plentiful around here (Katahdin Iron Works) in winter, usually being found in flocks of five to ten or more. In the early morning they can be heard high overhead, uttering a quick characteristic calling. After the sun strikes the tops of the elms they alight on them, changing their note to one of a different nature. As the sun rises higher and higher and begins to melt the snow around the buildings, they fly to the ground and feed on almost anything thrown out. Whether or not they eat scraps of pork and salt I do not know, but I have repeatedly seen them eating the discolored snow wet on by the horses and men around the camp doors.

The American Crossbill seems never at rest. Even when feeding on the ground they are always on the alert and continually rising, perching for a short time on some convenient place and then dropping back for a few more choice bits. In the afternoon they seem to disappear from their haunts of the morning and although I have looked for them the only result has been the sound of a note or so floating down from high overhead." (Wade A. Fogg.)

At times the Crossbills are indeed watchful and wary, just as Mr. Fogg wrote, seemingly ready to take flight at the least sound, again they are exceedingly tame and will barely hop out of one's way as they walk by. The diet is supposed to be normally seeds of various kinds but as a matter of fact the Crossbill is omnivorous.

On the University of Maine Campus a flock of twenty remained all the spring feeding on the seeds of the spruce and pine. They would deftly insert their bills in the scales of the cones, and with a quick prying twisting motion, part the scales

and draw out the seed. These were shelled and the wings and husk thrown downward, while the sweet kernels were swallowed. One way I could locate this flock always, though while feeding they were very quiet and inconspicuous, was by walking around until the winglike appendages of the coniferous seeds were discovered floating downwards through the air. These birds remained on the campus from late winter until June and did not nest, nor did specimens which were taken show any physical ability to breed.

In the gravelly yards and streets of the quieter sections of Bangor I have often seen the Crossbills in June, on the ground picking up seeds of the elm and maple, and also eating small beetles, ants and other insects which passed across the gravelled stretches. Considerable gravel is also eaten to help in grinding the food. In July, 1906, while collecting some willows along the Penobscot at Bangor, I was puzzled to hear a peculiar snapping sound from the willow bushes I was studying. On looking carefully I observed several Crossbills engaged in eating larvae of *Vanessa antiopa* and the small green lice which were numerous. I have also seen them engaged in picking apart the cottony colonies of lice which are always found in bunches of alders in late summer, and most certainly eating something they took from the cottony bunches.

Lumbermen have told me of instances where the Crossbills were seen feeding on the material left in salt pork barrels thrown outside of the camps. On a pinch I have known them to eat the buds of elm, maple, birch, poplar and willow. The seeds of the hackmatack, birch, alder, pine, fir, spruce and hemlock are probably their chief and staple articles of diet. They climb about the branches of the trees, using their feet and bills to help them along, now hanging head downward, now sidewise, now hovering before something they wish to inspect.

The nesting season seems variable, open to great latitude of duration and likely there are some seasons when a flock does not

nest at all, as for example the flock I studied on the University of Maine Campus. That authentic instances have been recorded of their nests being found in February and March is undoubted. Mr. Eugene P. Bicknell found a nest containing three eggs in the lower Hudson Valley on April 30. The nest was placed in a cedar tree eighteen feet from the ground, supported on a mass of small tangled twigs. The foundation was spruce twigs, the nest proper of matted shreds of cedar bark, felted by finer material and lined with horsehair, fine rootlets, grass stems, pieces of string and two or three feathers. These eggs measure 0.74×0.56 , 0.75×0.58 , 0.78×0.59 . Their color was pale greenish, spotted and dotted about the larger end with various shades of brown and lavender. (B. N. O. C. 5, pp. 7-11.)

A nest is recorded as being built under a tank which supplied a camp with water at Forked Lake, New York. It was composed of a few twigs, a thick layer of cedar and hemlock bark, lined with plant down. As the nest interfered with the indicator of the water tank it was torn down before any eggs were laid, on June 5. (Kennard Auk 12, 304.) Mr. C. H. Morrell found them paired in March in Nova Scotia and the males in full song.

In Maine I have seen the parent birds with young not long out of the nest in March, April, May, June, July and August in various sections of the State, and in Penobscot County thus in every one of these months but June. At such times they are generally in family groups of six, occasionally only five, consisting of the two parent birds and the immature ones. In many cases my judgment of the immaturity of the young was based on slight traces of down adhering to their plumage as well as seeing them clamor for food which was supplied by the parents, both male and female feeding the young with a pecking, spitting motion of the bill, forcing the food into their opened mouths. The bills also of the young did not show any appreciable indication of being crossed in these instances. It would seem, judging by the young seen in a group, that four eggs was the usual number laid.

When on the wing the birds of a flock call frequently and almost continuously to one another, uttering a harsh, twice repeated note sounding like "pip-pish" or "kip kip" or sometimes much like "shack-shack." Their flight is undulating. When they alight they often utter a few soft calls. The song of the male is "Grosbeak-like" lower, softer, but still very similar, a series of softly warbled notes.

522. *Loxia leucoptera* Gmel. White-winged Crossbill.

Plumage of adult male: throat, breast, sides, back, rump and belly more or less colored or washed with dull rosy; back somewhat black marked; wings and tail black, the feathers outwardly narrowly edged with pale yellowish; the wing coverts white tipped, forming two distinct white wing bars; belly whitish. Plumage of adult female: wings and tail as in male; feathers on back and head with blackish centers; more or less suffused with olive green above and below; bright yellow on rump. Immature plumage: similar to corresponding stage of American Crossbill, but slightly darker. To be told in all plumages by the two white wing bars. Bill always crossed, the lower mandible being either to the right or left of the upper. Wing 3.40; culmen 0.60.

Geog. Dist.—Breeds from Maine and the northern states northwards to Arctic regions; in winters irregularly and sporadically southward, sometimes to Illinois and Virginia.

County Records.—Androscoggin; rare winter visitor, (Johnson). Aroostook; locally found as resident, especially in the Woolastook Valley about Fort Kent and St. Francis, (Knight). Cumberland; rare winter migrant, (Mead). Franklin; common winter resident, (Richards). Hancock; sporadically occurring, seen throughout summer on the islands, usually rare, (Knight). Kennebec; very rare resident, (Powers). Knox; (Rackliff). Oxford; breeds rarely, found a nest in June, 1880, and secured the birds, (Nash). Penobscot; usually very rare, occasionally sporadically common, seen every month in the year, though not consecutively, (Knight). Piscataquis; winter visitor, some winters common, (Homer). Sagadahoc; not common, (Spinney). Somerset; seen in summer in northern county, (Knight). Waldo; sporadic at all seasons, (Knight). Washington; uncertain, some winters common, breeds in winter, (Boardman).

The remarks made in general about the American Crossbill will apply with equal force to the present species, and indeed sometimes both species occur in the same flocks. The call note of this species is slightly softer and lower, a whistled "peet peet," otherwise very similar. As far as my acquaintance with

the species goes, practically all the remarks except those in relation to breeding and seeing the young birds could be repeated here. Published descriptions of the nests and eggs do not differ from those relating to the American Crossbill.

Genus ACANTHIS Bechstein.

527a. *Acanthis hornemannii exilipes* (Coues). Hoary Redpoll.

Plumage of adult male: wings and tail fuscous, feathers edged with white; rump white, pink tinged; back grayish brown, feathers white margined; bright red crown cap; throat blackish in middle; breast pink tinged; belly and sides white, the latter only slightly streaked. Plumage of adult female: pink on rump and breast lacking, otherwise not different. Plumage of immature: red crown cap lacking, otherwise like female. To be recognized in all plumages by the white unstreaked rump, the lightly or not at all streaked sides and the very sharply pointed bill. Wing 3.00; culmen 0.30; tarsus 0.54; tail 2.35. A tuft of bristle-like feathers over nostril.

Geog. Dist.—Arctic America and northeastern Asia; in winter rarely southward to the northern United States.

County Records.—Cumberland; a specimen, seemingly an immature female, was taken at Westbrook, January 26, 1896, (Norton, P. P. S. N. H., April 1, 1897).

Mr. Norton's specimen seems the only one from Maine now extant though both Dr. Brewer and Mr. Verrill cited the species in their lists. Judging from the fact that Mr. Norton's bird was associated with common Redpolls, Pine Siskins and a few Greater Redpolls in a flock it seems likely that other examples might occur thusly and be overlooked. In general habits, food, etc the species does not differ from the common Redpoll. The nest is said to be rather large, composed of small twigs and grass, lined with feathers and hair. The eggs are two to five in number, pale bluish green, spotted about the larger end with reddish brown and black. The measurements are about 0.68 x 0.51 (Ridgw.).

528. *Acanthis linaria* (Linn.). Redpoll.

Plumage of adult male: crown cap bright red; breast and rump tinged with pink; rump generally streaked; middle of throat blackish; back gray-

ish brown, the feathers ochraceous or buffy margined; wings and tail fuscous, edged more or less with whitish; belly and sides white, the latter streaked with dark, or fuscous. Plumage of adult female: no pink on rump or breast and generally more streaked on sides. Immature plumage: red crown cap lacking, otherwise like female. Length 4.50 to 5.00; wing 2.80; culmen 0.35; tarsus 0.55. Bill sharp and pointed with tuft of stiff bristly feathers over each nostril.

Geog. Dist.—Northern portions of Northern Hemisphere, breeding north of the United States; in winter sporadically south to Virginia, Kansas and Oregon.

County Records.—Androscoggin; common winter visitant, (Johnson). Aroostook; common winter visitor, (Knight). Cumberland; common winter migrant, (Mead). Franklin; irregularly abundant winter visitor, (Lee and McLain). Hancock; sporadic winter resident, sometimes very abundant, (Knight). Kennebec; quite common winter visitor, (Powers). Knox; winter, (Rackliff). Oxford; visitant, (Nash). Penobscot; irregularly abundant winter visitor, (Knight). Piscataquis; common winter visitor, (Homer). Sagadahoc; common spring and fall, (Spinney). Somerset; common winter resident, (Morrell). Waldo; sporadically common winter bird, (Knight). Washington; common winters, also summer resident, (Boardman). York; migrant, (Adams).

Though usually common and generally distributed throughout the State from late October or more usually about November tenth up to late April, or occasionally even as late as May nineteenth (Brown), the species varies in abundance from season to season. Some winters they are here by thousands, other winters only a few are seen. Mr. Boardman reported the species as summer resident near Calais, and probably it very rarely remained there through the summer.

There have been what I regard as well authenticated reports from the upper Woolastook and Saint Francis Valleys of this species remaining rarely in the summer, but it needs further research to verify this absolutely. The semi-boreal conditions prevailing there are more favorable to their remaining than about Calais, where Mr. Boardman found them.

During the fall and winter they sweep about the country in roving, restless flocks of ten to several hundred, flying in undulating waves with a characteristic short whistling chirp much like "chip-chip." Occasionally this call is varied by

"perk-a-ree" or "pree-a-a-h" uttered in a clear high pitched warble.

During the winter of 1907 a half dozen of these little birds spent several days in my garden, feeding on the seeds of *Betula populifolia* which grew on a small tree in the garden. They clambered about, hanging head down and in various other postures, opening the catkins and getting out the seed which they shelled and devoured. When they had stripped the tree they descended to the ground and feasted on the hundreds of seed they had, aided by the wind, scattered about. Passing teams caused them to rise quickly and nervously and perch in a tall maple near by, until reassured they again flew down to feed. They were not afraid of any of the household and several times I was within ten feet of them as they were feeding without their taking alarm as long as all was quiet, but the least noise of a passing team forty feet away caused them to rise. They kept up their quick nervous calling more or less continuously.

Among the things I have known them to eat are seed of *Alnus mollis*, *Alnus incana*, *Betula populifolia*, *Betula lutea*, *Betula lenta*, *Betula alba papyrifera*, *Larix laricina*, *Thuja occidentalis*, *Tsuga canadensis*, *Ambrosia artemisiacifolia*, *Chenopodium album*, *Phleum pratense*, *Calamagrostis canadensis*, and various other tree, grass and weed seed. I regard them as decidedly beneficial on account of the great number of weed seed they consume, while the seeds of our native trees which they eat in no way prevent the abundant seeding of these species, but on the contrary by scattering the seed broadcast, as in the case of the birch in my garden, they rather aid in the scattering of seed of trees. Occasionally when the seed crop is scarce they eat a few buds of birch, alder, poplar, and other trees. They like to feed in the thickets along streams and by the wayside, or on the weeds sticking up through the snow by the fields and waysides.

A nest taken near Cut-throat, Labrador, June 15, 1896, was said to have been placed six feet up in a spruce tree against the trunk. It is described as composed of weed stems, down from willow catkins, feathers and lichens, lined with feathers of Ptarmigan, Grouse, etc. The four eggs now before me are bluish white, speckled with reddish brown and umber, chiefly at the larger ends. These eggs measure 0.65 x 0.48, 0.69 x 0.49, 0.66 x 0.50, 0.65 x 0.50. Four to seven eggs are said to be laid but the more usual number is four or five.

528a. *Acanthis linaria holbællii* (Brehm). Holbæll's Redpoll.

Plumage: similar to that of the Redpoll to which you are referred for description; the present species is *supposed* to average slightly larger in size with a proportionately larger bill; aided by a good imagination perhaps it can be detected in a large series of Redpoll skins. Length 5.00 to 5.25; wing 2.90; culmen 0.34; tarsus 0.58.

Supposed Geographical Distribution.—Northern coasts of Europe and Asia, Norway to Japan, and portions of Alaska; rare(?) in Eastern North America.

County Records.—Cumberland; a male not in full adult plumage was taken at North Bridgton by J. C. Mead, November 25, 1878, being in a flock of the common species, and after being identified both by Mr. Brewster and Mr. Ridgway the record was printed; it is now in my collection, Mr. Mead having generously presented it to me, (Knight); one taken at Gorham, February 3, 1903, a female, was associated with a flock of the common Redpoll, (Norton, J. M. O. S. 1904, p. 5).

This *so-called variety* is supposed to have a distinct breeding range and to differ as previously noted from the other Redpolls. Its actual differentiation is a matter of extreme difficulty, even to experts, and the specimen in my collection can scarcely be distinguished from others in my series of Common Redpolls, though referred to Holbæll's Redpoll by both Mr. Brewster and Mr. Ridgway. In the opinion of the author this variety is made up of intermediates between the Common Redpoll and the *well marked* Greater Redpoll. It very likely occurs more commonly in eastern North America than is indicated by the records at hand, which in addition to the above are one from Quebec

(Ridgway) and three from Massachusetts (Brewster). The breeding, food, habits, etc., are not different from those of the Redpoll with which it seems so often associated.

528b. *Acanthis linaria rostrata* (Coues). Greater Redpoll.

Plumage: somewhat darker colored and with the sides more broadly and heavily streaked than either of the two preceding; general plumage and coloration same as in Redpoll. Length 5.25 to 5.75; wing 3.13; culmen 0.38; tarsus 0.64.

Geog. Dist.—Greenland and northeastern North America; sporadically south in winter to New England, New York, northern Illinois and Michigan.

County Records.—Cumberland; abundant near Westbrook in January and February, 1896, (Norton, P. P. S. N. H. 1897, p. 104); one at Westbrook, December 12, 1903, (Norton, J. M. O. S. 1904, p. 5). Kennebec; one shot at Gardiner, December 30, 1896, (Powers, Me. Sp. Feb. 1897, p. 9). Knox; one shot near Spruce Head, February 17, 1896, a young female, (Rackliff).

Mr. Norton (l. c.) has stated that "This large dark form was abundant in Westbrook during the months of January and February, 1896. It was first observed January 26, when it was less numerous than true *linaria* with which it was constantly associated. Its numbers were augmented by new arrivals, and on February second it was the prevailing form. On the eighth of the month no Redpolls could be found. A return movement was soon noticed with constant increase in numbers until March fifteenth. *Rostrata* was not observed after February twenty-seventh.

Though not reported from many localities there seems no reason to doubt that this form occurs sporadically in abundance in different sections of the State but more particularly perhaps along the coast. In habits and food it does not differ noticeably from the Redpoll with which it is often or perhaps usually associated in flocks. The nests are said to be placed in willows and other small bushes in thickets at not over three to five feet from the ground. The eggs are not different from those of the Redpoll but average slightly larger.

Genus ASTRAGALINUS Cab.

529. *Astragalinus tristis* (Linn.). American Goldfinch; Wild Canary; Thistle Bird; Yellow Bird; Lettuce Bird.

Plumage of adult male in summer: cap on crown, wings and tail black; wing coverts and secondaries white tipped and tail feathers white on inner edge; back and under parts pure yellow. Plumage of adult female: black crown cap lacking; upper parts grayish brown; below whitish with buffy brown suffusion and yellowish washing on throat; wings and tail somewhat duller colored but much as in male. Adult male in winter: differs chiefly from adult female in the wings and tail being deeper black with stronger white tips to the coverts and secondaries and edgings to tail feathers. Immature plumage: tips to wing coverts and secondaries more cinnamon colored; plumage browner, suffused with cinnamon, otherwise much like female. Wing 2.75; culmen 0.42.

Geog. Dist. — Breeding from Virginia, North Carolina, Kentucky, Kansas and North Dakota northward to Manitoba and Labrador; wintering from the northern United States southward to the Gulf of Mexico.

County Records. — Androscoggin; common summer resident, (Johnson). Aroostook; resident, not especially common but generally occurring, (Knight). Cumberland; common resident, (Mead). Franklin; common summer resident, sometimes in winter, (Lee and McLain); resident nearly every year, (Sweet). Hancock; summer resident, (Murch); occasional at least in winter, (Knight). Kennebec; common resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; common summers, leads a roving existence winters, (Knight). Piscataquis; common, often resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common resident, (Morrell). Waldo; common summer resident, roving winter resident, (Knight). Washington; abundant, breeds, (Boardman). York; breeds, (Adams).

The species is commonly and generally observed throughout the State from May until October, though occurring more rarely at other seasons. In the winter they lead a roving existence in small flocks, being likely to occur almost anywhere in the State, either in small bands by themselves or associated with Siskins, Redpolls and their allies. They fly through the air with an undulating billow-like motion, generally crying "chee-chee-chee-chee" or "per-chick-a-wee." In the proper season the male sings loudly and joyously in much the same general style as the tame canary, though with a freeness which is

quite different. When alighted they often call "chee" or "chee-chee," "chee-we" or "pea-r-ee."

The nest is placed in various shrubs and trees at heights of four to forty feet from the ground. They rather seem to prefer to nest in maple trees near Bangor, selecting those bordering the highway but elsewhere they nest in more varied situations, various evergreens and hardwood trees, willows and alders along streams being often selected. Four to six eggs are laid.

A typical nest was found in the horizontal fork of a maple tree, fifteen feet from the ground near Bangor, July 20, 1896, at which time only the foundation was laid. The nest was discovered by hearing the calls uttered by the male and female as they caressed each other in the intervals of nest building, and while at the side of the nest. These calls and caresses while at the nest seem characteristic of the species. The first egg was laid July 29, so that nest building took about nine to ten days. An egg was laid each day until on August 4th it contained six pale bluish-white unspotted eggs which measure 0.61×0.49 , 0.65×0.49 , 0.63×0.49 , 0.62×0.49 , 0.66×0.50 , 0.61×0.49 . The nest measured three inches in height outside by one and a quarter internally, and its external diameter was three and the internal diameter one and a half inches. It was composed of fine soft vegetable fibers, bark strippings, silky plant fibers, strongly and compactly felted and lined with thistle down.

The male bird accompanied the female while she was gathering building material but did not seem to do much if any of the work of collecting material himself. He sang and called more or less and seemed bound to caress her and keep up a constant low "chirping and cheeing" with each successive addition to the nest. He fed her more or less with semi-digested material which he pumped up from his interior.

Other nests which I have found and observed were located by following up the calls which are uttered whenever the feeding process is going on at the nest. The males seem to feed

the females more or less even after the young are hatched, but rarely if ever do they feed the young birds, this as well as incubation being done almost exclusively by the mother. Incubation generally requires twelve to fourteen days (only eleven days in a case observed by Mr. A. H. Norton) and the young leave the nest in from fifteen to sixteen days more.

The young are fed with a peculiar pecking, spitting motion, the mother raising semi-digested food from her interior and depositing it in their mouths, this being accompanied by clamorous calls when the young have gained sufficient strength to make a sound. As the young get older the rim of the nest becomes lined with a fringe of excrement, which is rather exceptional, for most birds carry away the ejecta of their young and drop it where it will not be offensive. This same fouling of the nest I found very characteristic of the Arkansas and Lawrence's Goldfinches in the west. The nesting season is late, usually from the middle of July through August.

The food consists of seed of various plants and weeds, especially such composites as Canada thistle, bull thistle, various wild sunflowers, golden-rod, aster and other weed seeds.

Genus SPINUS Koch.

533. *Spinus pinus* (Wils.). Pine Siskin; Pine Linnet; Pine Finch; American Siskin.

Plumage of adults: above streaked with dusky or blackish, the feathers margined with buffy; wings fuscous, most of the feathers margined with yellow and yellow at base forming a yellow band on wing; tail fuscous, the feathers mostly yellow basally, very slightly indeed tipped or edged with whitish; many of the primaries very slightly tipped with whitish; below white or whitish, locally tinged with buffy and heavily streaked with dusky or blackish. The females are usually paler and less heavily streaked than the males. Immature plumage: more yellowish below and suffused with fulvous above. Tuft of bristle-like feathers over nostrils and bill sharp and pointed in all plumages. Wing 2.80; culmen 0.42.

Geog. Dist.—North America, breeding from the northern tier of states, southward in the Rocky Mountains and northward through the British Provinces; in winter irregularly southward to the Gulf States.

County Records.—Androscoggin; rare winter visitor, (Call). Aroostook; resident, breeds in a few localities in the wooded regions throughout the county, (Knight). Cumberland; common migrant, one nest taken, (Mead). Franklin; common resident, (Swain). Hancock; common locally from fall to spring, rare summer resident, (Knight). Kennebec; very rare, (Dill). Knox; winter visitant, (Rackliff). Oxford; breeds, (Nash). Penobscot; common locally from fall to spring, local summer resident, (Knight). Piscataquis; rare summer resident, (Whitman); common winter resident, (Homer). Somerset; very irregular, sometimes summer resident, (Morrell); breeds quite commonly locally in northern county, (Knight). Waldo; rather common fall to spring, rare summer resident, (Knight). Washington; winter visitant, sometimes summer resident, (Boardman).

In southern Maine the species is generally observed from October to about March, occurring in sporadic abundance, while in northern and eastern Maine the species may be observed locally almost any month in the year. It is of a restless, roving disposition, breeding in one locality one year to not perhaps be seen there again during the next season, roving here and there in small flocks of ten or a dozen, sometimes even hundreds together, seldom remaining long anywhere save in the nesting season.

The call notes are very similar to those of the American Goldfinch and though generally able to distinguish them I cannot record on paper the exact difference in their notes uttered when flying or feeding, save that the calls seem rather harsher and louder. They occasionally utter a peculiar interrogatory "wee?" which is different from any Goldfinch call I have ever noted. The song of the male I have never heard but it is evident that such exists.

The late Clarence H. Morrell writes regarding the habits of this species (Auk 16, p. 252). "When I returned to River Herbert in March I found them by far the most abundant bird. There were thousands scattered throughout the spruces all along the shore, not in large flocks, but quite evenly distributed over many square miles of woodland. They were in full song and from sunrise to sunset their lisping notes were constantly heard. On the sixteenth of March while at Cristie's

Camp I saw a bird gathering material and by watching her soon located the nest. The female alone carried material, the male accompanying her to and from the nest, singing constantly. A very short stop was made at the nest. Evidently some material was accumulated before it was arranged. A day or two after finding the nest I went to Shulee, so had no opportunity to again visit the nest until the twenty-ninth, when I left Shulee early in the morning, going to Two Rivers and thence through the woods to the camp. At this date the ground was mostly covered with snow in the woods, though it was rapidly melting. I found the nest completed. The bird refused to leave the nest until I was nearly within reach, and she remained near, several times returning to the eggs for a moment. The nest was placed well out toward the end of a limb of a spruce tree, twenty-seven feet above the ground. It was saddled on the limb and radiating twigs but not attached to them. Considering the size of the bird, it is quite large, rather flat and bears no resemblance to nests of *Spinus tristis*, measuring as follows: height, 1.63 inches; depth, 0.75; outside top diameter 4 inches; inside top diameter 2 inches. It is composed mainly of dark pendulous tree-moss, with some fulvous bark from weed-stalks, plant-down, usnea, and other mosses. About the bottom of the nest is woven a few spruce twigs. The lining is entirely the pendulous moss. It contained four eggs but slightly incubated. These have a pale blue ground color, slightly darker than eggs of *Spinus tristis*, somewhat sparingly marked about the larger end with pale purplish and a few dots of brownish black. The eggs measure respectively 0.66 x 0.50, 0.66 x 0.46, 0.63 x 0.49, 0.63 x 0.48 inches." This nest of Mr. Morrell's was found in Nova Scotia.

Mr. J. C. Mead found a nest containing four young at North Bridgton, Maine, April 24, 1878, so it seems very evident that the eggs are sometimes laid the last of March or the first of April. Fresh eggs have been found in New York, May 12, May 25 and June 25, so it seems quite likely that in certain

cases the nesting season is prolonged or subject to much variation, the same as in case of the Crossbills.

Generally the species is a frequenter of coniferous woods during the nesting season as well as at other times, but in fall and winter it is found in very similar situations to and often associated with the Goldfinches and Redpolls. The food consists of the seed of various coniferous and deciduous trees, and in winter weed and plant seeds, in fact their diet is very similar to that of the Redpolls. Up the West Branch of the Penobscot in late May, 1908, I found them in family groups of four to six feeding on the swill and other refuse near the driving camps, and also eating scraps of meat left in the empty pork barrels.

Genus PASSER Brisson.

§§§. *Passer domesticus* (Linn.). English Sparrow; European House Sparrow; Rats-of-the-air; Winged Fighters; "Cursed Sparrers."

Plumage of adult male: crown grayish, bordered by a chestnut patch on each side extending from eye to nape; back streaked black and chestnut; rump ashy; wing coverts tipped with white, forming two white bands on wing; a large black patch in middle of throat and breast; sides of throat, lower breast and belly whitish. Plumage of adult female and immature: back streaked black and ochraceous; head and rump grayish brown; below whitish, suffused on sides and breast with grayish brown; otherwise much like adult male. The immature males generally have the black throat and breast patch more or less strongly indicated, and very exceptionally a female shows this also. A great tendency to partial or more or less total albinism exists in many individuals. Wing 2.97; culmen 0.68.

Geog. Dist.—All of Europe save Italy, eastward to Persia, India and Ceylon; introduced by misguided innocents and naturalized in America, Australia, New Zealand and many other countries.

County Records.—It is sufficient to state under this heading that the species is far too commonly found in every county in Maine, there being scarcely a town or village of any size where it does not occur, and it is also distributed throughout the more thickly settled country districts, even being found along the country highways between Fort Fairfield and Limestone and between Fort Kent and St. Francis in Aroostook County.

As nearly as can be ascertained it was first introduced to Maine in 1854, when Col. William Rhodes liberated specimens at Portland. (Rhodes, F. & S. 8, p. 165). Others were liberated in the same locality in 1858 by T. A. Dubois (English Sparrow in N. A. p. 18). These attempts seem to have been unsuccessful. Fifty were liberated near Portland in 1884 and seem to have survived (J. M. O. S. 1884, p. 46) if we may judge by their successful distribution throughout the State.

Though it is indeed lamentable that such an undesirable foreigner was brought here, we must now make the best of it. Indeed there is a rather interesting side to observe in this noisy, filthy, quarrelsome, aggressive scamp. What is more exciting than to watch two to six males, with drooping wings and up-turned bobbing tails, squawking and hopping about a demure dull colored female who turns swiftly to face and jab at this, that or the other one of her noisy admirers who form a circle about her. Finally away she goes with all in full squawk after, squabbling and fighting one another in the air. Finally her choice of admirers is made and nest building begins.

A return or crevice in some building, an apartment in a martin house, the top board over an arc light in the streets, the interior of a bridge, ornamented vines on trees or about houses or thick evergreen trees, and as a last resort when other available places are used up the branches of elms and maples are used as nesting sites. Both birds labor vigorously to carry up hay, straw, rags, paper, feathers, twine and other material out of which the large bulky nest is made. Some nests are roofed over, others not. Some are a foot across externally by nine inches deep, while internally they are about four inches deep by three inches across, and always very warmly lined with feathers internally.

Five eggs taken May 27, 1900, from a nest placed on the beam of a bridge at Stillwater, measure 0.86 x 0.62, 0.82 x 0.62, 0.85 x 0.62, 0.84 x 0.62, 0.85 x 0.62. Four to nine, generally five or six eggs are laid. These are very variable in

color and markings, ranging from white to olive brown and purplish gray, speckled, spotted, dashed and blotched with olive, dark brown, slate, purplish gray and black. Some eggs are boldly blotched, others finely speckled and peppered, being exceedingly variable.

The male sometimes helps to incubate but the female generally does most of this work while her mate is noisily squawking about, telling other birds to keep away and going as far as possible in his efforts to get into a fight with any of his own kind or of the native species which may venture near.

Incubation requires fourteen days in the early part of the season, and only twelve days in summer. The young leave the nest in thirteen to sixteen days according to weather and season. The number of broods reared in Maine in a season varies but is always at least two and in some instances certainly as many as five, making the offspring of a pair of these birds from at least ten to more often thirty or thirty-five birds in a season. Nearly every egg hatches and practically every young bird reaches maturity as the nests are placed in places not accessible to any save human enemies.

Now let us see what is the food eaten by these birds. Their chief preference is for fragmental, undigested grain found in horse droppings, and they may be seen feeding on this in the city streets both summer and winter. Bread crumbs, and the odds and ends of food thrown or swept into the streets and back yards are also eaten. Carloads of wheat, barley and other small grains are visited in the freight yards and any spilled grain is likewise devoured, whole corn, on account of its large size, being practically the only grain they do not eat.

In the summer they eat many of the moths which are found dead under the electric lights and will likewise take live moths under similar conditions. It is very rarely if at all that they will eat the caterpillars of canker worms, tent worms or other injurious insects, for I have seen such caterpillars crawling unharmed and even spinning their cocoons on the Sparrows'

nests. To give Satan his due, they do in late summer and fall eat the seeds of *Polygonums*, especially *P. aviculare*, which grows in a mat along the roadsides, and other roadside weed seeds are also eaten to a considerable amount, but here ends the small good they do; now for some of the harm. They go into the oat, barley and wheat fields near Bangor as well as elsewhere in the State in flocks at the time the grain is getting ripe and feast on it day after day, breaking down much grain in their noisy squabbling and bickering. Green corn and green peas are relished so much that it is a fight in the city to keep the infernal Sparrows and Doves from destroying them, the latter at planting time and the former when the product of such seed as escaped the Doves is "in the milk." Cherries, strawberries, raspberries, blackberries, and other cultivated fruit are greatly relished by them.

The menace the Sparrows are to our native birds is a subject for future worry. They occupy all bird houses and when the Martins, Swallows, Bluebirds, and Wrens appear in the spring their homes must be fought for, and as far as I am able to ascertain, the Purple Martins are the only species able to successfully drive the Sparrows and only after repeated assertion of their rights. The House Wren was a common bird about Bangor in my boyhood days and I attribute its imminent, if not already completed extermination in Maine to the English Sparrow. There have been no House Wrens about Bangor for at least twenty years, and it is nearly eight years since a House Wren was reported anywhere in Maine.

I have seen the Sparrows attack our native birds such as Chipping Sparrow, Yellow Warbler and other small birds which had the misfortune to dare to nest in the trees and city orchards the Sparrows had pre-empted, drive them from their nests and throw out their eggs or young. Since one of my neighbors has paraded the street daily, shot gun in hand, and shot every English Sparrow visible, the number of native birds nesting in the large park across the way and in the neighboring

gardens is at least four times what it was before this man took the destruction of the Sparrows into his own hands. There is a clear case of cause and effect. The Sparrows are shrewd and wary, quick to take alarm and leave the vicinity where disaster befalls them. They are hard to catch in a trap and always on the lookout for cats and other enemies.

Genus PASSERINA Vieill.

534. *Passerina nivalis* (Linn.). Snowflake; Snow Bunting; Snow Bird; "Warm-blooded Snowflake."

Plumage of adult male in summer: head, neck, under parts, inner half of primaries and secondaries, rest of wing and outer tail feathers white; back, scapulars, end of primaries and secondaries and inner tail feathers black. Plumage of adult male in winter: feathers above rusty, brown tipped, overlapping and more or less concealing the black basal portions which show here and there, giving a mixed black appearance to the plumage; otherwise much as in summer save that the wings, tail, breast and sides are more or less edged and washed respectively with rusty. Plumage of adult female in summer: primaries fuscous and secondaries tipped with fuscous; streaked with black above, otherwise much like summer adult male. Plumage of adult female in winter: differs from winter males only in the fuscous color of the primaries. Immature plumage: wing with more dusky than in the female, otherwise very similar. Wing 4.20; culmen 0.43; tail 2.80.

Geog. Dist. Northern portion of Northern Hemisphere, breeding in Arctic regions; in winter south to the northern United States, and irregularly to Georgia, southern Illinois, Kansas and Oregon.

County Records.—Androscoggin; common winter visitor, (Johnson). Aroostook; common winter visitor, (Knight). Cumberland; common winter visitor, (Mead). Franklin; winter visitor, (Swain). Hancock; common winter bird both inland and among the islands, (Knight). Kennebec; common winter resident, (Gardiner Branch). Knox; winter, (Rackliff). Oxford; visitant, (Nash). Penobscot; common locally November to April, often abundant, (Knight). Piscataquis; common winter visitor, (Homer). Sagadahoc; common fall, winter and spring, (Spinney). Somerset; common winter resident, (Morrell). Waldo; common winter bird, (Knight). Washington; winter visitant, (Boardman). York; common, (Adams).

Though occasionally found in the State as early as October tenth, this is very exceptional, the species more usually appearing in early November and then locally and sporadically common until late March, a few exceptionally remaining until even

April twelfth. Minot mentions a large flock being seen on Mt. Katahdin in early August, 1869. They occur in small flocks of ten to thirty or forty along the country roads and in the barnyards and fields, while along the coast they sometimes occur in flocks of hundreds in the salt marshes and along the beaches.

The call notes uttered while in flight or when running along the ground are characteristic and readily recognizable when once known. The notes are a characteristic whistle, hard to put on paper, a peculiar "chirr" and a softly warbled call of a few notes. My attention has often been called to a flock of these birds on a winter's day while driving along the highway by hearing their call and seeing them appear in their leisurely rather undulating flight, dropping at the wayside like a veritable fall of large snowflakes.

They *run* along the highways feeding on the undigested portions of grain found in horse droppings, and likewise resort to manure heaps in fields and barnyards. They eat all sorts of grass and weed seeds such as *Polygonum*, *Ambrosia*, *Chenopodium*, *Ixophorus*, *Calamagrostis* and almost any accessible seeds of similar nature. Along the coast they eat very small mollusks and crustaceans as well as grass and weed seeds of the characteristic coastal plants. Though common throughout the State at the proper season, they are always most abundant along the coast.

In their Arctic homes the nests are built on the ground, being composed of grasses, fine sedges and similar material, mixed with moss and lichens and warmly lined with feathers. Davie records a nest containing four eggs in the collection of Mr. Norris which was taken in Iceland, May 30, 1882. These eggs were pale greenish white, speckled and spotted, and most heavily so near the larger end, with russet and lilac gray. These eggs measure 0.84 x 0.61, 0.88 x 0.67, 0.88 x 0.61, 0.86 x 0.64. Chapman describes the eggs as pale bluish white, thinly marked with umber or heavily spotted or washed with

rufous brown. It seems likely that like the eggs of related species they vary considerably. Four to seven, usually five eggs are said to be laid. The species is found as far north as human beings have ever penetrated and it seems not unlikely that if the North Pole is ever reached the Snowflakes will be found there in summer.

Genus CALCARIUS Bechstein.

536. *Calcarius lapponicus* (Linn.). Lapland Longspur; Lapland Bunting.

Plumage of adult male in summer: back mixed streaks of black, ochraceous and buffy; a buffy line back of eye; nape rufous; outer two tail feathers with some white blotches or largely white, tail otherwise fuscous; head, neck, throat and breast black; below whitish, streaked with black on sides. Plumage of adult male in winter: upper parts streaked black, rufous ochraceous and buffy; back of head, throat and chest obscured by whitish tips to feathers; sides of head brownish; otherwise much like summer plumage. Plumage of adult female in summer: similar to plumage of male in winter, but markings bolder; breast and sides streaked with black and ochraceous buff. Plumage of adult female in winter: browner above and less streaked; brownish white below with dusky chest markings indistinct. Immature plumage: above tawny buffy and black streaked; below buffy with broad black streaks on throat, front and sides of breast. Wing 3.65; culmen 0.42; tail 2.60. Hind toe nail always as long as, oftener longer than the subtending toe.

Geog. Dist.—Boreal portions of Northern Hemisphere, breeding entirely in Arctic Regions; in winter, south to the northern portions of the United States and to Kansas and Colorado; casually to the Middle States and South Carolina; the chief winter range is west of the Alleghany Range, only stragglers occurring in New England.

County Records.—Cumberland; very rare winter resident, (Brown, C. B. P. p. 13); one near Portland, October 26, 1876, (Brown, P. P. S. N. H., 2, p. 13); five seen at Scarborough, October 31, 1901, (Norton, J. M. O. S. 1904, p. 44); found at Pine Point, November 5, 1905, Norton, *ibid.* 1905, p. 79); Pine Point, March 10, 1906, and December 28, 1906, (Norton, *ibid.* 1907, p. 17). Knox; I have a specimen taken at St. George, March 16, 1896, (Norton, 1 c. p. 43) Oxford; visitant, (Nash). Piscataquis; rare, (Homer). Washington; very rare, (Boardman); one at Lubec, December 29, 1890, (Norton, J. M. O. S., 1904, p. 44).

The regular migration range of this species is west of the Alleghany Mountains and formerly such few as occurred here

were only stragglers, though recently they appear to occur regularly in limited numbers at Pine Point, near Scarborough. The species may be sought chiefly along the coast and more seldom indeed in the interior from about October twenty-seventh until late March. Their call is a whistled "chirr" and they also utter a song or cry of a few notes, generally keeping up this calling while on the wing. Their chief associates here are Snowflakes and Horned Larks with which they are usually associated, more seldom here in small flocks of four or five by themselves. In the west they occur in flocks of thousands by themselves. They are seed eaters and partake of much the same diet as the Snowflakes.

About the Great Slave Lake, Mackenzie River and in Alaska they nest in May and June, placing the nests of mosses, dry grass and sedges on the ground in tussocks and on hummocks. Four to six, usually five eggs are said to be laid and these are described as being greenish gray to bluish white, obscured and washed with clouded markings of greenish gray, chocolate brown and grayish brown.

538. *Calcarius ornatus* (Towns.). Chestnut-collared Longspur.

Plumage of adult male in summer: top of head, spot on ear coverts, line behind eye, breast and belly black; rufous collar at rear of neck; line over eye, chin and throat white; rear row of lesser wing coverts white, others black. Plumage of adult male in winter: the black feathers of the head and under parts tipped with brownish or buffy so as to partly or entirely conceal the black; otherwise as in summer. Plumage of adult female: grayish brown, streaked with dusky above; grayish buffy brown below, sometimes streaked with darker; under tail coverts whitish. Immature plumage: general color above dusky, the feathers edged with whitish and brownish buff; lower parts grayish buff, streaked on the breast with dusky. Claw always as long if not longer than the subtending toe. Wing 3.30; bill 0.38.

Geog. Dist.—Interior North America, breeding from eastern Manitoba, western Minnesota and eastern Nebraska westward and northward to Montana and Assiniboia; casual west of the Rocky Mountains; straggler to Massachusetts and Maine.



NEST AND EGGS OF THE VESPER SPARROW.

Photograph by Ora Willis Knight.

County Records.—Cumberland; a specimen taken at Scarboro, August 13, 1886, is in Dr. Goodale's collection, (Goodale, Auk. 4, p. 77).

Though an abundant bird in the west, especially in the Plains, it can be expected in the east only as a mere straggler. I have in my collection a nest and three eggs sent me from Watertown, South Dakota, where they were taken May 16, 1896. The nest was composed of soft prairie grass, lined with a little hair and was situated on the ground, the top flush with the surface of the prairie. The nest measures one and a half inches in height externally by three-fourths of an inch in depth internally, and its diameter externally is three and a half by one and three-fourths inch internally. The eggs measure 0.75×0.53 , 0.74×0.50 , 0.75×0.55 . Three or occasionally four eggs seem to be laid. These are dull white to grayish green in color, speckled, spotted, blotched and even lined with reddish brown and black and obscure patches of purplish or lavender. Their food consists of seeds and various insects.

Genus POECETES Baird.

540. *Poæcetes gramineus* (Gmel.). Vesper Sparrow; Grass Finch; Bay-winged Bunting; Gray Bird; White-tailed Field Sparrow.

Plumage of adults: general color above sepia brown, strongly streaked with black and tinged slightly with ochraceous buff; wings and tail fuscous; outer tail feathers mostly white and the next inner one with some white; edgings of outer primaries white; tips and edgings of tertiaries brownish; lesser coverts rufous; below white, streaked with black on the breast and sides and more or less buffy tinged on breast at least. Immature plumage: very similar, above in general more of a clove brown cast with similar streakings and edgings of feathers to adult; streakings on breast and sides below clove brown rather than blackish. Wing 3.10; culmen 0.43; tarsus 0.82.

Geog. Dist.—Eastern North America, breeding from Virginia, Kentucky and Missouri northward to Nova Scotia and Ontario, west to the Plains; wintering from Virginia southward.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; summer resident of the older settled districts, rare in the Woolastook Valley, rather common near Fort Fairfield, Presque Isle and Caribou,

(Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; abundant summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common summer resident, (Johnson). Penobscot; common summer resident of settled districts, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; quite common summer resident, (Morrell); seldom indeed in northern county, (Knight). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; abundant summer resident, (Adams).

In spring the first migrants appear from the south occasionally as early as April fifth, more often about the middle of the month, while the latest I have seen the species in the fall is October nineteenth, most individuals being gone earlier in the month.

The species may be commonly found running along the roadside or through the fields, rising to fly a short distance when closely pressed. The white tail feathers are readily perceived as they fly and serve to distinguish them from our other common related species. The song of the male is uttered quite frequently in the spring and at intervals during the day, though most often in morning and evening. In evening he selects a perch in the top of a bush or tree and keeps up his pleasant, characteristic ringing song until after twilight has given place to darkness. During the morning hours he sings similarly but less persistently. The song is very distinct from that of the Song Sparrow but yet it has a "family resemblance" to it in a way. The ordinary note is a mere "chip" which is uttered in a louder, more anxious tone to denote alarm or concern.

It is essentially a species of the fields, grassy, weedy hillsides, weed-grown ploughed lands and roadsides, running along or perched on a bush, tree, fence or telegraph pole. The nest is always on the ground, sometimes sunken in a slight depression so as to be flush with the surface, at other times on a hummock or in a tussock of grass or weeds. Though very hard to determine the real condition of things when the sexes are

practically alike, I think the male aids the female in building the nest and incubating the eggs, and both certainly help to feed the young. A typical nest was found on the ground in a deserted, weedy garden patch on a slight hillside at Bangor, June 24, 1900, when it contained slightly incubated eggs measuring 0.77×0.63 , 0.79×0.61 , 0.79×0.62 , 0.79×0.61 . The nest was composed of dried grass and rootlets, lined with finer grasses and rootlets and measured in external depth two inches and internally one and a half inches. The external diameter was seven and the internal diameter two and a half inches. The nest was situated in a small tussock of yarrow. Three to five, usually four eggs are laid and these vary from white to pinkish or grayish white in color, dotted, specked, lined and blotched with reddish brown, rusty brown and umber, the markings rather uniformly scattered over the surface or rarely about the larger end.

Nest building requires from seven to fourteen days, according to the weather and other conditions. An egg is laid each day and incubation requires from eleven to thirteen days, depending on the weather, closeness with which the birds sit and other circumstances. The first set is laid in late May or June and a second litter is reared in late July or August. The young leave the nest in about fifteen days, sometimes a day or so sooner or later. The food is rather variable, the young being fed largely on beetles, grubs, small green caterpillars and similar insects, while the parents as well as the young when fledged eat seeds of various weeds and grasses. I should estimate their diet in summer as being fully sixty per-cent insects, while in the fall it is about the same amount of vegetable material. They are entirely beneficial.

Genus PASSERCULUS Bonaparte.

541. *Passerculus princeps* Maynard. Ipswich Sparrow; Gray Bird; Sable Island Sparrow; Maynard's Sparrow,

Plumage of adults in summer: "Top of head sepia brown with darker streaking and median ashy line; rest of upper parts ashy or smoke gray, most pronounced on the nape, obscurely streaked on the neck and rump, broadly striped on back and upper tail coverts with deep brown. Each feather is centrally clove brown, merging into an outer zone of sepia or vandyke, broadly edged (narrowly on crown) with gray which on the inner webs of the median feathers of the crown, on the back, and on the tertiaries, becomes conspicuously ashy white and which forms two obscure wing bars at the tips of the greater and median coverts. Quill feathers of the wings and tail deep hair brown above, paler below, the two outer retrices paler than the rest, the shafts lighter colored, the webs (chiefly the outer) narrowly edged with ashy white. Under parts white, streaked rather broadly with brown along the sides from the bill to the tail and on the breast, giving the effect of spotting when the plumage is disarranged. . . . The chin and jugulum are immaculate and, together with a malar stripe, broadening posteriorly, are pure white. A broad superciliary line is canary yellow, becoming ashy posteriorly. The orbital ring is whitish, more or less tinged with yellow. The auriculars are ashy or brown tinged, the lores paler. Lining of wing and longer under tail coverts . . . white with dusky shaft streaks. Bend of wing yellow . . ." (Dwight). Plumage of adults in autumn: "Above hoary, even grayer than in spring dress, owing to the broad ashy edgings of the feathers. The russet on the wings is more pronounced, the vandyke zone of the dorsal feathers is broader, and the superciliary line is ashy white or only slightly tinged with yellow. Beneath a slight buffy cast prevails except on the chin, abdomen, and lower tail coverts, and the streakings are suffused, and paler and rustier than in spring." (Dwight). Young of the year: "Differs from the adults in the brownish, rather than grayish tints above, in the richer, deeper russet on the wings, and in the decided buffy wash that suffuses the head, the neck and the under parts. This buffiness is most marked on the sides and breast, and it strongly tinges the malar stripe and auriculars." (Dwight). Wing 2.89; culmen 0.43; tarsus 0.87; tail 2.24.

Geog. Dist.—Breeding only on Sable Island, Nova Scotia; wintering from Sable Island rather scattering along the coast to Virginia and rarely to Georgia.

County Records.—Cumberland; transient, rare in spring, common in autumn, confined to the seashore, (Brown, C. B. P., p. 13; first taken in Maine at Cape Elizabeth, March 20, 1875, (Brown, R. & G. 6, p. 81; one at Old Orchard, March 28, 1882, (Brown); two specimens between Pine Point and Old Orchard, January 23, 1886, (Goodale, Auk 3, p. 277). Knox; rare, one on Little Green Island, (Rackliff). Sagadahoc; one in spring, (Spinney); one taken at Seguin Island, October 11, 1900, by Captain Spinney, (Norton, J. M. O. S. 1904, p. 45).

Though data is not at hand to prove the fact, it seems very likely that this species occurs along the coast west of Penob-

scot Bay during a more extended time than is shown by the records of its capture. The range of dates, if none have been overlooked, show that the species occurs only from October eleventh to March twenty-eighth, but it seems likely that September and April specimens might be recorded if careful search were made daily in the proper localities. It may occur along the coast east from Penobscot Bay, the region being little visited by ornithologists at the season when the species is likely to occur.

Mr. Brown states that between Scarboro Beach and the Saco River a collector could find a dozen or more of these birds at almost any date between October thirteenth and November sixth, later than which he never looked for them. Dr. Dwight has placed on record the statement of Mr. Boutelier that these birds began to leave Sable Island early in September. He says there are no autumn or winter records for any point north of Portland, Maine (and indeed the only exceptions to Dr. Dwight's statements are the specimens taken by Captain Spinney and Mr. Rackliff), and there are very few spring records for New Brunswick or Nova Scotia.

Dr. Dwight writes of the species as running along, head downward, among the tussocks and vegetation of the sand dunes, presently taking wing and flying away, sometimes with a "chip" but more oftener silently and rapidly, often a long distance before alighting. They generally run a distance before they fly, and prefer to frequent the sand dunes covered with grass rather than the salt marshes in which they are seldom found. In the mating season they bow and flutter before their intended brides, uttering a murmuring chirping. The males often give notice to their incubating mates of the approach of danger by uttering suppressed "tchips" when the females sneak off the nests and presently join them. Practically the only way to find a nest is by flushing the female from it, when if incubation is advanced she will flutter away with an appearance of being severely injured. The male has a song which has been

graphically represented as "tsip / tsip / t's/é-/e/e/è pr-ré-e-âh," uttered in a thin, high pitched, rather sibilant grasshopper-like lisp. They sing at irregular intervals, the dusk and early morning being the favorite hours.

They begin to lay in early June. The nest is placed in a cup-shaped hollow about four inches in diameter and fully two in depth which is scratched in the sand by the birds. The nest is compactly built, being externally made of dead weed stalks, coarse grasses and sedges, and bits of moss, lined with finer bleached blades of a sedge (*Carex*) and sometimes a few horse hairs. Two sets of five and three of four eggs were secured by Dr. Dwight. He gives the average size as 0.85 x 0.61, or slightly larger than those of the Savanna Sparrow. The ground color is bluish or grayish white, often so washed with brown as to appear olive brown, usually so splashed and sprinkled with different shades of umber and vandyke brown as to almost conceal the color of the shell. In many cases the blotches aggregate to form a ring about the larger ends of the eggs, while there are also purplish and grayish brown markings which are less observable. Many eggs have a few irregular hair lines of deep brown, and the eggs of the same set vary much in coloration. The nests are always on the ground, either in the grass, under a sod or other shelter or in under various bushes.

The summer food consists chiefly of insects, being about 75.5 % animal matter. The winter food consists of 57.8 % vegetable matter, 34.9 % gravel and sand, and only 7.3 % animal matter. The summer food is beetles, grasshoppers, ants, bugs, spiders, flies, snails, etc., and some seeds of grasses and weeds. The winter food is largely grass seeds and a few weed seeds. Practically all the data regarding the habits and including the description of the species is taken from Dr. Dwight's Monograph, "The Ipswich Sparrow and its Summer Home," to which those desiring a fuller account are referred.

542a. *Passerculus sandwichensis savanna* (Wils.). Savanna Sparrow.

Plumage of adults: prevailing color above dark brown, the centers of the feathers blackish, margined rufous and ashy; a yellow mark over eye and on bend of wing; wings and tail fuscous, the former margined on outer webs with ochraceous buff and the latter with whitish; below white, streaked with blackish; the streaks rather wedge-shaped on the breast; throat rather buffish. Immature specimens differ in the general color above being clay color with dark streakings; below with more or less of a buff suffusion, but otherwise very similar to adults. Wing 2.65; culmen 0.44; tarsus 0.88; tail 2.08.

Geog. Dist.—Eastern North America, breeding from Missouri and northern New Jersey to Labrador and Hudson Bay; wintering from Illinois and Virginia (rarely from coast of Maine) to Cuba and Mexico.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; not rare in the grassy river bottoms as summer resident, even quite frequent in certain parts of the Woolastook Valley, (Knight). Cumberland; rare near Bridgton, (Mead); abundant summer resident, (Brown, C. B. P. p. 13). Franklin; common summer resident, (Richards). Hancock; common summer resident of the outer islands and along the coast, local inland, (Knight). Kennebec; abundant summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Lincoln; common on the islands, (Norton). Oxford; fairly common resident, (Johnson). Penobscot; common summer resident of the intervale lands and fields of the southern section, very local in similar places in northern county, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell); seldom and local in the northern county, (Knight). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman).

The species is a common summer resident along the coast, even on the outer grassy islands, arriving in early April, from the second to the eighth, and departing during late September or early October; October seventh latest at Bangor. Capt. Spinney has taken a specimen at Seguin, positively of this species, January 24, 1897, which is in his collection, while Mr. Rackliff took one on Big Green Island, November 28, 1898, this being in the collection of Mr. Norton. We may however regard these winter specimens as extremes. Inland in suitable grassy fields, intervale lands and meadows along the rivers and streams they appear about the middle of April and leave in September as a rule. They are less abundant and more local

inland, but lack of suitable habitat has probably had full as much to do with their not being present as anything else.

The species is peculiar and rather retiring in its habits, sneaking through the grass with lowered bobbing head and tail, when pressed rising and flying a short distance low down, to suddenly drop and remain petrified a short time and then run again. They likewise run along the grassy edge of the roadsides in similar way. When feeding or otherwise so busily engaged as to be unaware of a person's approach they often do not take alarm until nearly stepped upon, when away they go from almost under the feet.

The song of the male is a grasshopper-like sibilant "tship-tsip-sip-sè-è-è-è-r-r-r-r-r" uttered from the grass or more often while perched on some rock, bush or fence. While they sing at intervals through the day, evening is their favorite time and several can be often heard answering one another from the fields at hand. A "chip" of alarm is frequently uttered.

Both birds aid in building the nest but the female does most of the work, and likewise most of the incubation. The male however does his full share towards feeding the young and angrily protesting against human intruders and other enemies. The nest is always placed on the ground, either in fields, intervale lands and meadows, salt marshes along the coast or on dry grassy slopes on some of the outer islands. A nest composed entirely of very fine grass was placed in a hollow made for it in a tussock of grass on an island in Penobscot Bay, containing four slightly incubated eggs on June 18, 1896. The nest was one and a half inches in depth externally by three-fourths of an inch internally. Its external diameter was two and a half and the internal diameter one and a half inches.

The eggs are bluish white in color, washed and blotched with cinnamon brown to form a large confluent broad wreath about the larger ends. These eggs measure 0.79×0.57 , 0.78×0.57 , 0.80×0.58 , 0.77×0.58 . Another nest taken at Orono, June

13, 1894, was hollowed out in a tussock of grass in intervalle land near the Penobscot River. This nest was larger and more substantial, composed of grass and sedge leaves, mixed with moss and lined with finer grass. This measured externally in height two inches by one-half an inch internally. Its diameter outside was four and inside two and a quarter inches. The five eggs this contained were rather evenly spotted and speckled all over with spots and dots of light brown and lilac, the markings tending to cover up the grayish white ground color. Along the coast nests are often placed under flat pieces of driftwood on the marshes.

Eggs of the first brood are laid in late May to mid June; these hatch in twelve days and the young leave in about fourteen days more. From early July to the middle of the month another brood is reared. The food consists of grasshoppers, crickets, beetles, grubs, caterpillars, worms and in fact the general run of small forms of life found in the fields and meadows in summer, at which season fully eighty per cent of the food is of animal nature, the balance being about fifteen per cent seeds, chiefly grass and weed seeds, and five per cent fine sand. In fall fully sixty per cent of the food is grass and weed seeds, while only thirty per cent is insects, the balance being sand as before.

Genus COTURNICULUS Bonaparte.

546. *Coturniculus savannarum passerinus* (Wils.). Grasshopper Sparrow. Yellow-winged Sparrow.

Plumage of adults: back black, apically spotted on feathers with chestnut, edged with pearl gray; crown blackish with buffish line through center; nape rufous brown edged with grayish; edgings of tertiaries and wing coverts rich buff; bend of wing lemon yellow; wings and tail dark grayish brown; tail feathers pointed, about equal length and end half of outer feather whitish; belly whitish and breast and sides buffy; a yellow superciliary spot. Plumage of immature: above mottled and striped with olive brown, grayish and buffy; wings and tail olive brown; wing coverts and tertiaries white-tipped; bend of wing only faintly yellow or entirely white; yellow

superciliary spot lacking; below white, streaked or spotted strongly on the throat and more faintly on the sides with olive brown. Wing 2.40; culmen 0.44; tarsus 0.75; tail 1.83.

Geog. Dist. — Eastern North America, breeding from the Gulf States north to Massachusetts and Minnesota, and rarely to southern Canada and Maine; wintering from North Carolina to Florida, Cuba, Porto Rico and coast of Central America.

County Records. — Cumberland; one seen at Westbrook, June 27, 1901, and heard singing, also seen June 28 and 29, (Norton, J. M. O. S. 1904, p. 46). Somerset; a full plumaged male was taken at Pittsfield, June 8, 1901, and in my collection, (Morrell). Washington; rare or accidental at Calais, (Boardman, P. B. S. N. H. 9, p. 126; May 24, while passing through a grassy swale I heard what sounded like the buzz of a giant fly, a sound new to me, and on approaching within six feet of the spot up flew a Sparrow which had an unfamiliar look. Having my glasses and Chapman with me I followed it up closely nearly an hour, satisfying myself that it was a Grasshopper Sparrow. For several days I went to the same spot, always finding it until May 22, when it had disappeared, (Clark).

Though a very rare bird in Maine, the species occurs under conditions and at seasons which indicate that it very likely nests in the State, though as yet no nest has actually been found here. The species is very secretive, preferring to frequent the old worn out fields, skulking through the grass and rarely taking flight until almost stepped upon, going a short distance in an erratic or zig-zag way and dropping to run again. Mr. Chapman describes the notes of this bird as sounding like "pit-tuck, zee-e-e-e-e-e-e-e," and although he says under favorable conditions the song can be heard two hundred and fifty feet away, a mere casual observer would not notice it when passing within ten feet of a singing bird. The song is very much like the notes of a grasshopper or cricket. They utter a "chirr" or "chick."

The nest is placed on the ground in fields, usually in a place hollowed out by the bird in a clump of grass or other plants. The nest is composed of grasses, lined with finer material of like kind, and three to six, generally four or five eggs are laid. These are clear white, slightly glossy, spotted with reddish brown and with rather obscure markings of lavender or lilac. Some eggs are rather evenly spotted while in others the mark-

ings tend to segregate or become wreathed at the larger ends of the eggs. A set taken at Newport, Delaware, May 25, 1894, measure 0.70 x 0.57, 0.70 x 0.56, 0.66 x 0.57, 0.71 x 0.57, 0.69 x 0.56. The collector states the nest was on the ground in a small bunch of grass in a grass field.

Genus AMMODRAMUS Swainson.

549. *Ammodramus caudacutus* (Gmel.). Sharp-tailed Sparrow; Sharp-tailed Finch; Lady Blackburn's Finch.

Plumage of adults: above dull brownish olive green, edged with pearl and grayish on back; crown olive brown with a median ashy gray line or stripe; bend of wing lemon yellow; tail olive brown, very indistinctly barred, the feathers narrow and pointed and the outer ones much shorter than inner ones; ear coverts gray; ochraceous buff lines over eye and down side of throat; breast and sides white, washed with buffy and streaked with clove brown or blackish. Immature plumage: crown and wings nearly black; above and on sides of throat before eye buff, broadly streaked on back and narrowly on throat and sides with clove brown; tail olive brown with clove brown streaks on shafts and indistinct barring; otherwise similar to adults. Wing 2.25; culmen 0.57; tarsus 0.88; tail 2.00.

Geog. Dist. — Atlantic coast from the salt marshes of Cumberland County, Maine, to Maryland and South Carolina; wintering from North Carolina to Florida.

County Records. — Cumberland; found at Scarboro, late in October, 1876, (Brown, B. N. O. C. 3, p. 98); found at Scarboro in summer 1879, seemingly breeding, (Brown, *ibid.* 5, p. 52); Mr. Norton also mentions it breeding at Scarboro, (J. M. O. S. 1904, p. 46). York; a juvenile plumaged specimen taken at Wells, July 24, 1897, (Norton, J. M. O. S. 1904, p. 46).

The species in question is confined to the salt marshes of the coast of this State from Scarboro to Wells, and probably under a hundred pair occur. Mr. Brown gives the extreme dates as from late May to November fifteenth. Mr. Norton found it as early as June fifth and not later than August twenty-eighth when it was moulting and not in condition to

(Foot Note. Hypothetical List. Though perhaps too vaguely apprehended it is well to mention the fact that Henslow's Sparrow, a species closely related to the Grasshopper Sparrow, might occur here and should be carefully considered as a possible species to be differentiated from specimens of Grasshopper Sparrow; its lateral tail feathers are much shorter than the middle pair; the breast and sides are streaked strongly with black.)

migrate. Mr. Brownson observed it at Scarboro, September 17, 1902, (Norton J. M. O. S. 1904, p. 46). In habits it appears to be rather secretive, running mouse-like through the grasses and sedges. The song is uttered while perched on a piece of driftwood or tussock. They also utter a "chip" of alarm or concern.

A nest sent me by the late Judge J. N. Clark was taken at Old Saybrook, Connecticut, June 8, 1895. This nest was composed entirely of rather coarse sedges and marsh grasses, lined with finer. It was on the ground among the salt grasses in a wet meadow near the shore of Long Island Sound, woven in among the green standing grass. The external height of the nest is one and three-quarters and the internal depth three-quarters inch. The diameter externally three and a half and internally one and three-quarters inches. The eggs measure 0.73×0.55 , 0.73×0.56 , 0.72×0.55 , 0.76×0.55 , 0.72×0.54 .

Three to six, more usually four or five eggs are laid, these are greenish or brownish white, very thickly and finely spotted and specked cinnamon brown. Some eggs are rather evenly marked all over, but a majority are rather more heavily marked about the larger end. Two broods are said to be reared, at least in the more southern portions of their habitat, but judging from their rather late arrival in Maine possibly they may not breed but once here. It is a matter for further investigation.

The food consists of various marsh insects, beetles, larvæ, small crustaceans, snails and allied animate life in part, also some vegetable matter. It seems very likely at certain seasons the vegetable diet will be found to predominate.

549.1. *Ammodramus nelsoni* (Allen). Nelson's Sparrow; Nelson's Finch.

Plumage: above darker than in the Sharp-tailed Sparrow, back more olive brown, the feathers more broadly margined with whitish; throat, breast and sides washed with deep ochraceous buff; streaking below absent or very

obscure, the lines dusky, suffused and narrow; smaller bird; otherwise in various plumages similar to *A. caudacutus*. Wing 2.20; culmen 0.43; tarsus 0.82; tail 1.90.

Geog. Dist.—Breeding in the interior marshes from Northern Illinois and portions of Missouri to North Dakota and Manitoba; in winter migrating southward through the Mississippi Valley to Texas and in part along the Atlantic seaboard, (exact route north or west of Maine yet unknown) from Maine to South Carolina, wintering from South Carolina to Texas.

County Records.—Cumberland; two at Scarboro, October 16, 1894, (Norton, P. P. S. N. H. 1897, p. 99); a male at Scarboro, May 22, 1897, and June 5, 1897, some observed, the males were singing, also taken in fall between October 9 and 16, (Norton, J. M. O. S. 1904, p. 46).

There is no evidence that the species breeds in Maine. Mr. Norton's exhaustive studies show that the species occurs in spring in the Scarboro Marshes from May twenty-second to June fifth, and in fall between October ninth and sixteenth, indicating the species passes by at about these dates and in its migration north and south. It seems very likely that somewhere northwards of Scarboro they either pass westward to their interior northern breeding grounds or else pass along the coast and thence up the St. Lawrence River, their exact route and destination being as yet veiled in obscurity. The nests and eggs in all probability do not vary greatly from those of the Sharp-tailed Sparrow and the food is very likely similar.

549.1a. *Ammodramus nelsoni subvirgatus* (Dwight). Acad-
ian Sharp-tailed Sparrow; Dwight's Finch.

Plumage: lateral crown stripes paler and more greenish brown than in Sharp-tailed Sparrow; grays prevailing on nape and back; outer edgings of back feathers ashy or pearl gray and obscure; throat, breast and sides washed with cream buff and obscurely streaked with ashy; otherwise similar to Sharp-tailed Sparrow. Wing 2.24; culmen 0.46; tarsus 0.86; tail 1.90.

Geog. Dist.—Breeding from Small Point, Maine, northward to the salt marshes of southern New Brunswick, Prince Edward Island and Nova Scotia.

County Records.—Cumberland; have one in full plumage taken on marshes near Brunswick, (L. A. Lee); first taken in the State at Scarboro in October, 1897, (Dwight, Auk. 4, p. 237); taken at Scarboro, (Norton). Sagadahoc; observed at Small Point, August 7, 1896, still engaged in domestic duties, (Norton, P. P. S. N. H. 1897, p. 100). Washington; one taken May 21, 1903, (Clark); one taken near Calais by Mr. Boardman which was probably this subspecies, (Boardman).

Along the coast of Cumberland County this species, as shown by Mr. Norton, is a regular migrant, the earliest date at which he has taken them there being October third, and he is inclined to believe they remain regularly until October thirty-first. Mr. Clark's specimen taken somewhere near his home at Lubec, on the coast of Washington County, on May twenty-first, fixes the date of spring arrival as the latter part of May, probably at about the same dates as the two preceding, closely related forms.

Dr. Dwight mentions their being rather abundant in the breeding season in the extensive meadows along the Petitcodiac River in NEW BRUNSWICK. These meadows he states are diked off and are in no sense salt marshes where the tide creeps in at will. The birds seem to use the dikes as highways. He also speaks of them as being found on the quite different type of salt marshes of Prince Edward Island and of the St. Lawrence where the grass is short and bogs, not ditches, are the rule.

At Small Point, Maine, where Mr. Norton found them they were on the salt marsh in close proximity to granite ledges and hills clothed with spruce. The males were in full song and Mr. Norton mentions the fact (l. c.) that they showed a decided preference for certain clumps of grass on which to perch while singing. Specimens taken seemed to show that the females alone did the work of incubation. Young birds of feeble flight were found by him in the short grass slightly removed from the creek. Dr. Dwight mentions them as very shy and secretive, sometimes flying a considerable distance when disturbed, but far more likely to dive into the grass and defy all efforts to again flush them. The flight is steadier than that of the Savanna Sparrow. A habit mentioned is that occasionally towards nightfall they will mount into the air and with set wings float down, fairly gushing with song, a habit also of the common Sharp-tail Sparrow.

The nest and eggs seem never to have been found but cannot be expected to differ from those of the common Sharp-tail.

Through the kindness of Mr. Norton five stomachs of this bird were furnished me for examination. Their food seemed to consist, judging by these instances, of Nemertean worms, beetles (only the harder body parts and wings remaining undigested in the specimens examined), unidentifiable flies slightly larger than common house flies, beetle larvæ and sand with a little vegetable matter which was seemingly extraneous. It seems very likely that any of the various worms, flies, beetles, grubs and larvæ frequenting the marshes would be readily eaten.

550. *Ammodramus maritimus* (Wils.). Seaside Sparrow; Seaside Finch; Meadow Chippies.

Plumage of adults: sides of head, wings and tail and upper parts olive green; back feathers edged with olive and pearl gray; a median crown stripe of gray, bordered by two lateral stripes of olive green, obscurely streaked with black; outer primaries edged with white, others with olive green; lesser coverts edged with yellow, the greater with russet; superciliary line greenish; edge of wing yellow and a yellow spot before the eye; below white, washed on breast and sides with buffy and faintly streaked with grayish; black line from base of lower mandible down side of throat. Immature plumage: above olive brown, streaked with clove brown; wings dull black; primaries edged with olive gray, secondaries with russet, coverts and tertiaries with buff and alulae with white; below white, washed with buff on sides of chin, on throat, along sides; narrowly streaked on throat and along sides with brown. (Dwight). Wing 2.48; culmen 0.63; tarsus 0.90; tail 2.15.

Geog. Dist.—Atlantic coast, breeding from Georgia to Massachusetts; wintering from Virginia to probably Florida.

County Records.—Lincoln; Mr. Smith has an immature male, taken at Shark Island, Muscongus Bay, (probably in Lincoln County) August 18, 1884, this being the one recorded by him in *Forest and Stream*, (Cf. Norton and Smith J. M. O. S. 1904, p. 47).

Only once has this more southern sea coast species straggled into Maine, as far as records show its presence. They are essentially birds of the salt marshes, being secretive and passing much of their time on the ground. Mr. Chapman records the fact that they mount on stalks of grass to sing their short song of four or five notes, and occasionally flutter into the air above the reeds to sing on the wing.

The nests are always on the ground in the grass of the salt meadows. Two nests with eggs were kindly sent me by the late Judge J. N. Clark, both being taken at Old Saybrook, Connecticut. Both nests were composed of coarse salt marsh grass and sedges, lined with the same which was only slightly finer. One nest is three inches high outside by one and a half inside, and four in external diameter by two internally. The other nest is practically the same in size and appearance. They were taken June 12 and June 8, 1895, each containing four eggs. The eggs of one set measure 0.85 x 0.62, 0.85 x 0.63, 0.84 x 0.64, 0.82 x 0.64. Those of the other measure 0.79 x 0.60, 0.81 x 0.61, 0.85 x 0.62, 0.80 x 0.62. The ground color of one set is bluish white, very thickly speckled with cinnamon brown. The other eggs are more grayish white speckled and blotched with umber brown, and the spots are heavier, larger and more dense at the larger ends of the eggs. Different sets show considerable variation in the amount and size of the markings, but all eggs are plentifully marked. Three to five, usually four eggs are laid and two broods are said to be reared. As far as I am able to ascertain, there being little data at hand regarding their food, they eat the various kinds of worms, beetles, grubs and insects found in the salt marshes.

Genus ZONOTRICHIA Swainson.

554. *Zonotrichia leucophrys* (Forst.). White-crowned Sparrow.

Plumage of adults: white stripe bordered each side by a black one of equal width through center of crown; white line from over eye along side of head; back grayish brown, feathers margined with gray; nape gray; rump darker; wing coverts white tipped; tail fuscous; belly, flanks and under tail coverts buffish; other under parts grayish white. Immature plumage: similar except the central line of the crown is pale grayish brown, bordered by a stripe of rufous brown of about equal width each side; feathers of back margined with brownish ash. Wing 3.05; culmen 0.42; tarsus 0.90. tail 2.93.

Geog. Dist.—Breeding from the Sierra Nevada and Rocky Mountains in the United States, and in Canada north of the Great Lakes to Labrador;

wintering from the more southern States into Mexico; migrating through the United States in fall and spring.

County Records.—Androscoggin; fairly common migrant, (Johnson); seen near Livermore at various times in spring, (Briggs). Aroostook; fairly common migrant, also seen in the Woolastook Valley in August, (Knight). Cumberland; common migrant, (Mead). Franklin; rare migrant, (Richards); saw a pair at Farmington late in June, 1887, (Swain). Hancock; rare migrant save along the coast where it is occasionally locally common, (Knight). Kennebec; rare migrant, (Larrabee). Knox; (Rackliff). Oxford; visitant, (Nash). Penobscot; fairly rare migrant, but some springs seen in numbers for a day or so, (Knight). Piscataquis; common migrant, (Homer). Sagadahoc; common some springs, not often seen in fall, (Spinney). Somerset; they are never very common, though of regular occurrence, (Morrell). Waldo; seen in numbers at just the right time for a day or so in spring, (Knight). Washington; very rare, (Boardman); spring migration, May 22 to 24, in limited numbers each year, (Clark). York; migrant, (Adams).

Mr. Brown states that near Portland they usually occur from May ninth to fifteenth for about ten days and again about October first. The species passes rapidly through the State in migration, spring and fall, more often being seen in numbers and more generally in spring. I am inclined to think they occur regularly and in considerable numbers throughout the State in spring and not at all rarely in fall, during the last few days of May and again in early October, the exact time of their appearance depending on the weather. They pass quickly through the State at times, again tarrying some seasons for a few days, probably entirely on account of weather conditions beyond our ken.

Generally near Bangor in the spring seasons when they are common, they are seen only a day or two in numbers, and then all are gone. Seasons when they are not so numerous they tend to straggle along for a few days in spring and in fall as far as my observations go they always straggle for ten days or so. I feel compelled to judge that the holding back of the tide of migration in spring sometimes occurs, and that birds gathered together south of us suddenly appear in numbers as soon as the migration conditions are favorable and pass quickly on. Other seasons when there is, so to say, no damming of the tide of migration they pass through more scattered

and gradually. Judging by snatches of song heard as they pass through, the wild melody they utter in the northern forests must be indeed sweet and pleasing. Their song as heard by me is a soft, sweet, longing series of whistles resembling certain notes of the Vesper Sparrow, uttered with the intonation and cadence characteristic of the end portion of the well known White throated Sparrow's song. Their usual call is a "tchip" uttered in distrust or alarm.

Such food as is eaten while they pass through the State is largely of an insect nature in spring, consisting of small beetles, flies, grubs and green caterpillars, while in the fall considerable grass seed and weed seeds as well as insects are eaten. They pass along the bushy wayside thickets, the alder lined banks of rivers and streams and through alder swamps and thickets, but sometimes come into the city gardens and scratch among the bushes. Usually only two to five are seen together, but when they are plentiful many are seen in suitable places in the course of the day.

The nest is placed on the ground, either in the woods or thickets in very similar localities, so it is said, to those selected by the White-throated Sparrows. Four or five eggs are laid. Five eggs before me were said to have been taken at Tes-siujak, Labrador, June 23, 1896, from a nest on the ground built of grasses and fine weed stems, lined with dog's hair and wool. These eggs measure 0.78 x 0.61, 0.78 x 0.61, 0.79 x 0.61, 0.84 x 0.60, 0.79 x 0.61. They are pale bluish white in color, rather heavily blotched with reddish brown and bay and in one egg with a few black spots. Some of the eggs are heavily blotched, almost wreathed about the larger end, while in others the spots are finer and more evenly distributed. It seems indeed likely that a series of eggs would show fully as much and similar variation to those of the White-throated and Gambel's Sparrows. As individuals have been seen in Maine in June and also August it seems possible that they may very rarely breed.

558. *Zonotrichia albicollis* (Gmel.). White-throated Sparrow; Peabody Bird.

Plumage of adults: line before eye and bend of wing yellow; white stripe through center of crown, bordered each side by wide black stripes; white stripe over each eye backward along side of head; back rufous, streaked with black; greater and middle wing coverts white tipped; tail grayish brown, very slightly paler edged on feathers; throat white; breast and sides grayish; belly white; wings deep brown, the primaries edged with whitish and the secondaries with paler brown. Immature plumage: the median crown line and the lines from over eye back to neck (superciliary lines) olive gray; black of head mixed with chestnut brown; edge of wing white or only slightly yellowish; gray of breast buff tinged; otherwise very similar to adults. Wing 2.95; culmen 0.45; tarsus 0.90; tail 3.10.

Geog. Dist.—Eastern North America, from the Plains to the coast; breeding from Maine and northern Michigan, rarely from Massachusetts northward to Labrador and the Fur Countries; wintering from Massachusetts, and rarely from southern Maine, to Florida.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; common summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, even on the outer wooded islands as well as inland, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common breeder (Nash). Penobscot; abundant migrant, very common summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common migrant, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; migrant, (Adams).

The earliest this species has been noted near Bangor is April sixth, but they arrive more usually about April twentieth and remain up to early November, exceptionally until November twentieth. The species has once been recorded at Saco on January twentieth, 1886, (Auk, 3, p. 277) and one also remained about the premises of Walter Rich at Falmouth during the winter of 1904 (Norton, J. M. O. S. 1904, p. 54) but their wintering in Maine is an exception.

On their arrival they are usually silent for a week or so or only utter a "cheep" or "peip" of alarm. As the season advances an occasional individual will utter a clear melodious "pea" and another more ambitious songster will try his voice

on "pea-pea-pea" and gradually more and more of their song is whistled until finally the northern Maine woods ring with "pea-pea-pea-all-day-long-sow-your-pea-sow-your-pea-sow-your-pea" or at least that is what the Maine farmers translate the plaintive whistled song as saying. Another song slightly different may be worded as "the-same-old-song-peabody-peabody-peabody." In the bushy thickets, brushy pastures and open woods of Maine in the inhabited regions, and in the most lonesome solitudes of the backwoods all through spring and early summer this sweet, plaintive melody is poured forth. The singer perches in the bushes or on the ground. They are largely terrestrial in habits, preferring the ground and low bushes, and rarely going far up in trees.

The nests are composed invariably of grass and mosses, lined with finer grasses and sedges and occasionally with a few feathers. They are placed on the ground, either at foot of a small bush, on a hummock in a bushy pasture or in the open or dense woods, or under a brush pile in the woods or clearings. Nest building begins about May tenth and about a week is needed to complete a nest, the female only doing the work. An egg is laid each day until the set of four or five is completed. Incubation requires twelve to fourteen days according to weather and other factors and the young leave the nest in fourteen days more. The eggs of the first brood hatch about June eighth and the young are ready to leave the nest by the twenty-second. A second brood is then reared in many instances. The male bird does not seem to either incubate or help to build but he does feed the young and seems to assume charge of them while the second litter is being incubated. Both birds are very solicitous, and if an intruder appears the female slips quietly off the nest, sneaks a short distance off and then begins to utter a series of "chips" and "tseeps" designed to draw attention to her. The male joins in the outcry, and shortly other neighbors of the same species also appear to aid in the tumult.

A typical nest was found at Hermon, June fourth, 1905, situated on a hummock in low, wet, rather open woods. This nest measures four and a half inches in diameter externally by two and a half internally. Its height is two and a half externally by one and a half internally. The four eggs were advanced in incubation and measure 0.75×0.59 , 0.78×0.60 , 0.77×0.60 , 0.78×0.61 . Another set of eggs taken May 24, 1896, measure 0.85×0.64 , 0.85×0.61 , 0.87×0.60 , 0.85×0.61 . Though four eggs usually are laid, sets of three and five rarely form the complement. The ground color varies from pale greenish blue to bluish white, variously speckled, spotted, sprinkled and clouded with rufous, brown, cinnamon and umber. One type of eggs is evenly and finely sprinkled all over, another type is covered with larger spots or blotches, scattered irregularly all over but largest and heaviest toward the larger end. An occasional egg has a few lines of black on it. The general tendency is towards an uniform sprinkling and suffusion of marks all over.

The food in summer consists largely of beetles, flies, grubs, while in spring and fall seeds of grasses and weeds form a considerable portion of their diet.

Genus SPIZELLA Bonaparte.

559. *Spizella monticola* (Gmel.). Tree Sparrow; Winter Chippy.

Plumage of adults: top of head chestnut; feathers of back centrally black, bordered by chestnut and edged with buff; rump grayish brown; greater and median wing coverts edged with chestnut and white tipped forming two white bands; a faint dark spot in center of breast; grayish line over eye with brownish line behind it; sides grayish brown; breast grayish white; middle of belly white; outer web of outer tail feather whitish. Immature plumage: streaked sepia and clove brown with chestnut washings on crown and back; wings and tail brown, edged with grayish white; coverts and tertiaries edged pale buff; grayish on throat; sides washed with pale cinnamon; otherwise much as in adults. Wing 2.96; culmen 0.40; tail 2.76.

Geog. Dist.—Eastern North America west to the Plains; breeding in Labrador and Hudson Bay region; wintering from Maine to the Carolinas, Kentucky and Kansas.

County Records.—Androscoggin; common migrant, (Johnson). Aroostook; common migrant in spring and fall, seen in early August at Fort Kent, (Knight). Cumberland; common migrant, (Mead); rather common winter resident, (Brown, C. B. P. p. 14). Franklin; common winter resident, (Richards). Hancock; common spring and fall migrant, (Knight). Kennebec; quite common, (Gardiner Branch). Knox; winter, (Rackliff). Oxford; (Nash). Penobscot; common migrant, occasional throughout the winter, (Knight). Piscataquis; winter visitor, (Homer). Sagadahoc; (Spratt). Somerset; common winter resident, most abundant in fall and spring, (Morrell). Waldo; common spring and fall migrant, a few winter, (Knight). Washington; only in migrations, (Boardman); abundant in winter, few in spring, (Clark). York; migrant, (Adams).

Near Bangor in the spring migration the first influx of individuals appears from March twentieth to April fifth and the tide of migration continues until the last ones have gone, about May sixteenth. In the fall the usual date of appearance is in early September, generally about the fourth and the tide passes along through October, only a few remaining through the winter. In spring as they pass along many give voice to a sweet warbling song which some observers have likened to the song of the Canary, though to me the resemblance is not apparent. The usual alarm note is a "chip" and they also utter a few twitters.

The food in winter consists of seeds of various weeds, grasses, golden-rods and asters and similar plants which protrude above the snow. In fall and spring they eat small beetles, smooth caterpillars, flies and various grubs and larvae, but even then seeds form the predominating articles of diet.

The nests are built on or very near the ground, composed of moss and grass lined with rootlets and hair. A set of eggs in my collection was taken from a nest composed of moss and grass, placed on the ground. The locality was near Cut-throat, Labrador, June 19, 1896. These eggs measure 0.70 x 0.55, 0.69 x 0.56, 0.70 x 0.56 and are pale greenish, very finely and thickly spotted with reddish brown evenly over the entire

surface. Other eggs are said to be sometimes rather more heavily marked about the larger end. Three to five is the usual number laid.

560. *Spizella socialis* (Wils.). Chipping Sparrow; Chippy; Chip Bird; Hair Bird.

Plumage of adults: crown chestnut; forehead black with a grayish line in middle; grayish line over eye and dark line back of eye; neck grayish behind; back streaked with black, rufous and buffy ochraceous; rump slate gray; secondaries and tertiaries edged with chestnut; wings and tail darkish or blackish; primaries edged with ashy; below grayish white to whitish. Immature plumage: top of head streaked like back; no black on forehead; otherwise very similar. Wing 2.74; culmen 0.37; tail 2.32.

Geog. Dist.—Eastern North America, west to Rocky Mountains, breeding from the Gulf States to Newfoundland and the Great Slave Lake; wintering in Gulf States and Mexico.

County Records.—Androscoggin; abundant summer resident, (Johnson). Aroostook; locally common, seemingly rare in the Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; summer resident, (Murch). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common breeder, (Nash). Penobscot; locally abundant summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell); rare in northern wilder sections, (Knight). Waldo; common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; abundant, (Adams).

The first spring arrivals appear about the middle of April, usually April tenth to seventeenth at Bangor, and the species remains until about October fifteenth or in southern Maine up to even November fifth. The species is essentially very sociable tame and confiding, frequenting the trees, vines and shrubbery of garden and orchard as well as roadside trees. Though occurring along streams, about lakes and ponds and along highways in the wilder sections of the State, the species is essentially a bird of inhabited regions and is rarely found in any numbers save in settled districts. They are sprightly little birds, hopping about on the lawns, walks, verandas and in the shrubbery of gardens, uttering an occasional "chip" or

"preet, preet, preet" and occasionally singing in an insect-like trill, "chippy-chippy-chippy-chippy."

In the summer they are essentially insectivorous, and large numbers of caterpillars, worms, grubs, beetles, flies and other injurious insects of garden and orchard are eaten. In early spring and fall their diet is largely seeds, largely grass and weed seeds, though a considerable amount of insects are eaten at all seasons.

The nest is almost always placed in bushes, trees, vines and shrubbery about gardens and orchards, along highways and in pastures, but once I found a nest on the ground containing four eggs. I have found nests in the following situations: apple, pear, spruce, fir, maple, cedar, elm, hemlock, hackmatack, poplar, willow, birch and alder trees and in honeysuckle and woodbines. The general preference with us seems to be a cedar hedge or a roadside hackmatack, spruce or fir tree or an apple tree in the orchard. The height of the nests varies from five to fifteen feet, generally about ten to twelve feet.

A typical nest taken near Bangor on June 2, 1901, was in a cedar tree twelve feet from the ground. This was composed of very fine grass stems and weed stems, lined with fine rootlets and horsehair. Most nests are lined with horsehair or if these are not available with fine rootlets. The nest described measures two and a quarter inches externally by one and three-quarters internally in height, while the external diameter is three and a half and the internal diameter one and three-fourths inches. The four eggs measure 0.71×0.51 , 0.76×0.51 , 0.70×0.51 , 0.69×0.51 .

The usual number of eggs laid is four, but many sets consist only of three and very rarely five are laid. The color is bluish green, sparsely spotted with cinnamon brown and blackish, chiefly about the larger end where occasionally the markings form a circle. I have seen eggs which were marked only by faint spots or washings of lavender and lilac, these however are exceptional.

Nest building begins about May tenth to fifteenth and a nest is completed in five to twelve days according to circumstances, and the same spot used the previous year or some place near by is selected usually. The male occasionally helps (rarely however in most instances) build the nest and does a small proportion of the work of incubation. He faithfully helps to feed the young however. The eggs hatch in from ten to twelve days and the young leave in twelve days more. A second brood is always reared, the eggs for this being laid in early July.

563. *Spizella pusilla* (Wils.). Field Sparrow.

Plumage of adults: head rufous with a very indistinct grayish median stripe; back streaked with black and edged with pale cinnamon and brownish ashy; rump brownish ashy; middle and greater wing coverts white tipped; gray line over eye; below whitish, tinged with grayish and buffy on breast and sides. Immature plumage: similar, streaked below with dusky on throat and sides; crown edged with grayish. Wing 2.60; culmen 0.37; tail 2.60.

Geog. Dist.—Eastern United States and southern Canada; breeding from Illinois and South Carolina to Maine, Quebec and Manitoba.

County Records.—Androscoggin; fairly common summer resident, (Call). Cumberland; breeding at Cape Elizabeth and found in Westbrook and Gorham, (Norton, J. M. O. S. 1904, p. 54); not common, (Mead); uncommon summer resident, (Brown, C. B. P. p. 14). Franklin; rare summer resident, (Swain); common summer resident, (Sweet). Kennebec; summer resident, (Larrabee). Knox; summer, (Norton). Oxford; breeds, (Nash). Penobscot; local summer resident, found in three places near Bangor, (Knight). Piscataquis; taken and seen near Dover, (Ritchie). Sagadahoc; rare, (Spratt). Somerset; seen once near Pittsfield, (Knight). Waldo; one seen at Islesboro' in 1894, (Howe, J. M. O. S. 1900, p. 30). York; not common summer resident, (Adams); common at East Parsonsfield in 1901, observed at Shapleigh, (Norton, l. c.).

Migration data seems lacking but Mr. Brown records it as earliest appearing on April seventeenth, while near Bangor I have not noticed it until May tenth. In fall they remain at least until September, probably much later. The species is very local in distribution and found only in sections where distinct Alleghanian faunal and floral characters prevail, even

though only very limited and locally in Canadian surroundings. They are distinctly birds of old bushy fields and pastures where the territory is rather open, spotted with bushes here and there. Here in spring and summer the characteristic clear, whistling song may be heard, one bird answering another from their favorite perches, for they usually occur in small, locally scattered colonies. I have never heard two sing exactly alike, but an individual bird utters the same song year after year, as far as my observations near Bangor go, for the same characteristic song of each individual is heard season after season from the same spots, favorite perches in bushes and low trees. The song of one of my friends sounds much like the syllables "chee-chee-chee-cheo-cheo-cheo-de-de-de-de-we-we." Another individual answers much as follows: — "cher-we-cher-we-cher-we-pe-o-pe-de-de-de-de-de-de-de." However much it varies, the tones and general character of the song is very distinctive so that I had rather identify the bird by its notes than by seeing it. The alarm note is a mere "chip."

The nest is placed on the ground or in a low bush. If on the ground a foundation of leaves is often made, and at any rate the structure is composed chiefly of grasses lined with finer grasses and horsehair. It seems likely that two broods are reared. A nest taken at Dubuque, Iowa, July 21, 1895, was situated in a wild gooseberry bush two feet from the ground, in an old country grave-yard, according to the collector. This nest measures in external height three and in internal height one and a half inches, while the diameter outside is four and inside two inches. The eggs measure 0.71×0.55 , 0.73×0.55 , 0.71×0.53 , 0.74×0.56 . Though three to five eggs are laid the usual number is four.

The food of the species consists of insects of about the same variety as eaten by the Chipping Sparrow and also various grass and weed seed. The incubation period and other family details remain unknown as far as I am aware.



NEST AND EGGS OF THE SLATE-COLORED JUNCO.

Photograph by Ora Willis Knight.

Genus JUNCO Wagler.

567. *Junco hyemalis* (Linn.). Slate-colored Junco; Black Snowbird; White Bill.

Plumage of adult male: throat and breast grayish slate; upper parts grayish slate, washed with grayish brown; outer two or three tail feathers white, others fuscous; belly white; sides grayish. Plumage of adult female: said in the manuals to be browner above and paler on throat and breast, but as far as I have observed these distinctions fail and the sexes are indistinguishable by plumage. Immature plumage: back, throat and breast streaked with dull black, otherwise very similar to adults. Bill always flesh colored or dusky pinkish buff in old and young respectively. Wing 3.00; culmen 0.46; tarsus 0.82; tail 2.78.

Geog. Dist.—North America, more general east of the Rocky Mountains; breeding from the higher Alleghany and Catskill Mountains, Maine and northern Minnesota northward; wintering from Maine to the Gulf States.

County Records.—Androscoggin; abundant migrant, rare summer resident, (Johnson). Aroostook; common summer resident, (Knight). Cumberland; common summer resident, (Mead); abundant transient, uncommon summer resident, occasionally found through the winter (Brown, C. B. P. p. 24); breeding quite commonly on Little John's Island, Falmouth, in August, 1897, (Norton, J. M. O. S. 1904, p. 54). Franklin; common resident, (Swain). Hancock; common summer resident, a few winter along the coast, (Knight). Kennebec; abundant, (Gardiner Branch). Knox; resident, (Rackliff). Oxford; common breeder, (Nash). Penobscot; abundant migrant, common summer resident, not rare in suitable spots through the winter, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; (Spratt). Somerset; common migrant, possibly summer resident, (Morrell); common summer resident of the northern wilds, (Knight). Waldo; common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; common migrant, a nest found in 1882, (Adams); confined to highlands near East Parsonsfield in 1900, (Norton, J. M. O. S. 1904, p. 54).

The tide of migration ranges with this species about from March twelfth to April third near Bangor, when hundreds, yes thousands, are often seen in flocks, scratching among the bushes and dead leaves in the woods and pastures and bushy thickets or perched on the trees, all doing their very best to make a noise. The result is a confused medley of sounds varying from the "chick-a-sit" uttered by some as they fly with opened tail showing the white outer feathers, while others cry "chit" or "chit-chit" and the males are tuning up

with a low, sweet, whistled song. In the fall they are more silent, the songs not being heard, only a "chuck" or a "chick-a-sit" being uttered as they fly a short distance and alight in a bush or among the leaves. I have never seen very large flocks in the fall, and a majority, all save the few that winter, have gone by November twenty-fourth.

The nests are always situated on the ground in the woods, pastures or clearings. A very favored nesting site in some localities is near the top of a low bank or "slide" along a railroad or woodland road, where at the top under an overhanging sod they place their nest. Again in the woods or thickets they nest at the side of a log, under upturned roots or in a tuft of bushes or shoots on the ground. Often the stubby growth in the middle of a deserted wood road is selected as a nesting site.

The nests are made of dry grasses, lined with finer grasses and with hair when this is available. With us the wilder portions of northern, western and eastern Maine and the wooded islands along the coast are their breeding grounds, in other words they are birds of the Canadian fauna. In sections where they breed at all they are generally common.

A typical nest taken at Katahdin Iron Works, June 29, 1903, was situated under an overhanging sod at the top of a slight bank beside the road. This nest was two and a half inches high outside by one and a half inside, and the diameter was four externally by two and a quarter inches internally. The four eggs measure 0.78×0.50 , 0.78×0.50 , 0.78×0.51 , 0.78×0.50 . Usually four or five but sometimes only three eggs are laid, the first set about the middle of May, sometimes as early as May first, while the second offering of eggs may be found in late June. The males help feed the young but I do not know more regarding the aid they give nor regarding the time required for incubation.

The young birds are fed on small beetles, worms, ants, grubs, and similar insects, the softer kind of insects being given to the



SONG SPARROW.

Photograph of Living Bird by Chas. H. Tolman, Portland. Kindness of The Journal of the Maine Ornithological Society.

very young birds. The food of the adults in summer is very similar, but in fall, winter and spring they turn seed eaters and indulge in various grass and weed seeds which they find in the bushes and thickets. At these seasons they also appear under the bushes and shrubbery of the city gardens.

Genus MELOSPIZA Baird.

581. *Melospiza cinerea melodia* (Wilson). Song Sparrow; Ground Sparrow; Bush Sparrow.

Plumage of adults: grayish line through center of the rufous brown crown; gray line over eye and rufous brown line from eye backward; back feathers streaked black and margined with grayish and rufous brown; wings blackish, with lighter edgings and the tertiaries and coverts buffy tipped; tail rufous brown with darker color on shafts of middle feathers; sides of throat black streaked; breast centrally streaked with wedge-like marks of black or brownish, forming more or less of a patch; sides streaked blackish and brownish; otherwise whitish below. Immature plumage: very similar to that of adults, averaging more buffy washings and less white below; tail indistinctly barred; streakings below more blackish; line over eye more buffish. Wing 2.61; culmen 0.50; tarsus 0.85; tail 2.68.

Geog. Dist.—Eastern North America, west to the Plains; breeding from northern Illinois and Virginia northward to the Fur Countries; wintering from Illinois and Massachusetts, rarely from Maine, to the Gulf States.

County Records.—Androscoggin; abundant summer resident, (Johnson). Aroostook; common summer resident, (Knight). Cumberland; common summer resident, (Mead); one observed at Cape Elizabeth, January 17, 1904, and one seen several times in winter of 1905, (Brownson, J. M. O. S. 1905, p. 28). Franklin; common summer resident, (Swain). Hancock; summer resident, common on the islands, (Knight). Kennebec; quite common summer resident, (Gardiner Branch); an individual seen near Gardiner January 13, 1896, (Larrabee, Me. Sp. 1896, p. 20). Knox; summer resident, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident, have seen it in February, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; summer resident, (Spratt); common in summer, occasional in winter, (Knight). Washington; very abundant summer resident, (Boardman). York; common summer resident, (Adams).

Though occasionally seen in winter, the species in question is more properly a summer resident of general distribution and common in nearly every portion of the State. Near Bangor

the first spring arrivals appear from March twenty-first to April seventh, and practically all are gone by October twenty-sixth, only the few winter stragglers remaining later.

The species best loves the bushy river, brook and pond shores, meadows and marshes, but it is also common along the country roadsides in the bushes, and I have even found it nesting rarely in rocky woodland clearings in the uplands. It is however primarily a bird of the lower lands, preferring to live not far from water. In the spring the males sing frequently, throughout the day, while in early summer their songs are more often heard in early morning and evening. Though very pleasing and characteristic the song cannot be well described on paper. The songster is usually perched on a rock, in a bush or on a fence, or sometimes well up in a tree. Occasionally an individual will sing on the wing. The ordinary alarm notes are a "chip" "tcheek" or "chuck." When alarmed they usually work downward into the bushes with bobbing tail, hopping along from twig to twig, or skulking through the underbrush, grass and leaves. They do not fly, save from bush to bush, unless closely pursued with evident intention to flush them or do them harm, preferring to work downward through the bushes.

The nest is variously situated, more often on the ground in a field or meadow near a brook or along a river or pond shore, sometimes in shrubs, bushes and thickets at a height of generally not over two or three feet, and very rarely indeed in trees. Mr. Swain tells me he has found nests in natural cavities of old apple trees in orchards near Farmington. June 7, 1895, I found a nest ten feet from the ground in the fork of a pine tree, and judging from circumstances the bird had had its first litter of eggs ruined by water and had resolved to avoid the same mishap the second time.

A nest taken May 27, 1900, was situated on the ground under a brush heap in a cleared pasture. It was composed of strips of cedar bark, grass stems, dry leaves and lined with fine grasses.

The depth of this nest was four and a half outside by one and a half inches inside. The diameter outside was nine inches longest way by five shortest way, and the internal diameter two and a half inches. The five eggs measure 0.73×0.68 , 0.76×0.68 , 0.73×0.67 , 0.73×0.67 , 0.74×0.67 . Other nests have been composed almost entirely of grasses and sedges, placed on the ground, in rose or blackberry bushes, or in cattails and sedges over water.

Four or five eggs are usually laid and these are in general white to bluish white or light bluish green, and very varyingly sprinkled, spotted, dotted and wreathed with various shades of reddish or rufous brown and sometimes grayish. A majority of the eggs are heavily spotted or wreathed about the larger ends, others are more evenly spotted all over.

Some individuals must begin nest building very early indeed, for I have found young birds in the nest rarely as early as May tenth. The majority of individuals, however, have fresh eggs in late May or early June with us, a second brood may be expected in early July, and very exceptionally a third brood is reared in mid August. Nest building requires seven to ten days and as far as I am able to judge the female *usually* does all this work, though once I did see both birds working on a nest, but the male was more inclined to shirk his share, picking up material, dropping it and picking it up again, singing meanwhile. Though the male is generally around to sound the alarm and see that all goes well, it is very little if any of the work of incubation that he does. He does however do his share towards feeding the young, and in some instances if not always, assumes their care while the female is incubating the second batch.

The eggs hatch in ten to fourteen days according to circumstances, and the young leave in ten to fourteen days more. In the case of ground nests they run before able to fly, scattering from the nest at my approach sometimes when only ten days old, while in the elevated nests they do not leave until later.

The old birds always make a great protest when nests with young are approached. When incubating the female usually does not fly off until almost stepped upon, though sometimes when the alarm is given by the male she will sneak away from the nest in the manner of the White-throated Sparrow.

The young are fed chiefly on insects, worms, beetles, grubs, flies, caterpillars, grasshoppers and similar insects. The old birds in spring and old and young in fall depend largely on seeds of various grasses and weeds, also taking a very considerable proportion of insect food. In summer the insect food is fully seventy-five per cent of their diet, while in fall and spring it is only about twenty-five per cent. They are very beneficial as a rule. Small fruits and berries, seemingly only the wild varieties, are occasionally eaten.

583. *Melospiza lincolni* (Aud.). Lincoln's Sparrow; Lincoln's Finch. Tom's Finch.

Plumage of adults: above wood brown, streaked with black; wings and tail blackish, edged with brown; below white, streaked with black except on abdomen; a deep pinkish buff band across the throat and similar stripe either side of throat and sides similarly tinged. Immature plumage: streaks more suffused and less sharply defined; otherwise similar.

Geog. Dist.—North America, chiefly the eastern sections; breeding from northern Illinois, the Adirondack Mountains and *probably* from northern Maine northward; wintering from southern Illinois to Mexico.

County Records.—Aroostook; a not rare bird of the Woolastook Valley in early July and August, which facts surely point to its breeding there, (Knight). Cumberland; a female shot at Westbrook, September 20, 1896, by Arthur H. Norton, (L. B. Me. p. 101); one taken at North Bridgton by J. C. Mead in 1879, in Bridgton Academy collection, (Mead, J. M. O. S. 1899, p. 31); a male taken at Westbrook September 25, 1897, and another May 18, 1900, (Norton, J. M. O. S. 1904, p. 55). Penobscot; one shot in quite heavy woods near Bangor, May 18, 1882, (Newell Eddy); spring and fall migrant of regular occurrence and probably full more frequent than records would indicate, (Knight). Sagadahoc; one taken at Seguin September 11 and another September 24, 1898, and four observed in 1899 between October 6 and 13, (Spinney, J. M. O. S. 3, pp. 19-20 and 5, pp. 56, 57, 58 and also Norton, *ibid.* 6, p. 55). Washington; rare and in spring only, (Boardman).

Lincoln's Sparrow has only been recorded, as far as I am able to ascertain, from the above given sections of the State,

though there is no good reason, in view of the more general distribution shown, why it should not be found everywhere by careful observers. The trouble is that the species has been overlooked. Mr. Smith was right in stating that the species was a regular migrant, arriving in May and quickly passing to the north and east (F. & S. 19, No. 25, p. 484), but owing to lack of definite data there alleged to prove his assertions, they were rejected in List of Birds of Maine, but I accept his statements made as being correct and only rejected his facts at the time because no number of definite records were brought forth to prove his assertions.

The species passes quickly through southern Maine at dates from May twelfth to May eighteenth, and in central Maine near Bangor they usually appear about the fifteenth to seventeenth. In fall they sometimes appear as early as September eighth, while October thirteenth seems to be the latest date known. Near Bangor the species generally appears and passes along very quickly in spring, so that unless seen during the two or three days they are going by they would pass undiscovered, and in the fall, though more leisurely in their going, two weeks at the outside covers their going by. They are rather silent and secretive, acting Song Sparrow-like in many ways, sneaking through the bushes and undergrowth along the highways and hedgerows in much the same manner. Their call, rather rarely uttered, is a "cheak" uttered in a thinish, shrill tone, and I have never heard them sing. They are generally seen by ones, twos or threes, often scattered along with the Song Sparrows in migration in fall, and usually by themselves in spring.

At Fort Kent in early July, 1904, a few were seen, and in early August, 1905, they were more numerous. They frequented the low evergreen thickets along the brooks and tributaries of the Fish River and along the Fish River itself, and on wooded, moist, evergreen hillsides back from the Woolastook River. There seem to be good reasons for concluding they were breeding, though no nests were found or young seen, but

the birds in several cases had an air of anxiety which betrayed them, and an occasional "chip" of alarm or a bird sneaking through the undergrowth with a worm or beetle grub in its beak pointed to the fact that young were near by.

The little I have been able to ascertain regarding their food, points to its consisting of the same range of variety of insects, worms and seeds eaten by the Song and Swamp Sparrows. Davie states that the nests are placed on the ground like those of the Song Sparrow, and that they are composed of grass. Three to four eggs are said to be laid, being greenish white, marked with chestnut and lavender gray, chiefly at the larger end. A set taken in Boulder, Colorado, July 18, he states measure 0.81 x 0.58, 0.81 x 0.59, 0.82 x 0.60.

584. *Melospiza georgiana* (Lath.). Swamp Sparrow.

Plumage of adults: grayish line over and blackish one behind eye; crown rufous; forehead black; back streaked with black, the feathers margined with rufous and ashy buff; wings and tail dark brownish or blackish, edged with chestnut; wing coverts paler; middle tail feathers darker on shafts; breast and sides grayish, *not streaked*; throat and belly white. Immature plumage: crown streaked with black, mixed with chestnut and grayish; breast somewhat brownish; otherwise similar. Wing 2.40; culmen 0.44; tail 2.40.

Geog. Dist.—Eastern North America westward to the Plains and accidentally to Utah; breeding from northern Illinois and Pennsylvania to Labrador; wintering from Massachusetts and southern Illinois to the Gulf States.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; a rather rare and very local summer resident in the Woolastook Valley, (Knight); not common at Houlton, (Batchelder). Cumberland; common summer resident, (Mead). Franklin; quite common summer resident, (Lee & McLain). Hancock; rather common local summer resident, (Knight). Kennebec; rare, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; rare summer resident, (Johnson). Penobscot; common local summer resident of southern section, rather less common but not rare northward, (Knight). Piscataquis; one observed, (F. H. Allen); fairly common near Dover, (Ritchie). Sagadahoc; common spring and fall, (Spinney). Somerset; common summer resident, (Morrell); rare in northern sections, (Knight). Waldo; local and fairly common summer resident, (Knight). Washington; not uncommon summer resident, (Boardman). York; not common migrant, (Adams).

The species in question is a bird of the wet meadows and sedgy, rushy marshes, the reedy borders of ponds and streams and similar situations, and in such places locally common in almost every section of Maine as summer residents. While in the spring and more particularly the fall migration they swarm in such localities, they also occur in migration in dryer localities such as roadside thickets, fields, hedgerows and similar places.

The earliest I have known the species near Bangor in spring is March twentieth, usually about April sixth to tenth, and these dates are earlier by considerable than the earlier dates given for southern Maine, (about April twelfth, Brown) or even Massachusetts and Sing Sing, New York, dates, the locality where they are found so early being the same place where the Short-billed Marsh Wrens are found, near Bangor. In fall they linger through October, possibly later, and it would not astonish me to have an occasional individual reported in winter, though as yet such has not been the case.

That many of the Sparrows found in swamps are Song Sparrows, erroneously reported by some observers as Swamp Sparrows, seems certain, but there need be no mistaking the real Swamp Sparrow when its song is heard, far different from the Song Sparrow's effort, being a clear, monotonous "weet-weet-weet-weet-weet-weet-weet" or "peet-peet-peet-peet-peet-peet." The alarm note is a "tchip" or "tcheep" with a metallic ring.

Though generally placed on the ground in a bunch of sedges or grasses in a meadow, the nests are also sometimes a few inches from the ground, even a foot up, in a low bush or shrub bordering a swale. Many nests have the dry grasses and sedges arched together over them while others are not arched. Practically all the nests I have seen were composed of dry grass blades and stems, sedge leaves and weed stems, lined with sedges and grasses. A nest found June 3, 1905, was placed in a tussock of sedge in a wet meadow. This nest was five and a half inches deep externally by one and three-quarters internally, while its external diameter was five and a half and the internal

diameter two inches. The eggs measured 0.78×0.55 , 0.78×0.55 , 0.80×0.56 , 0.78×0.55 and several other sets I have measured did not vary greatly.

The eggs are pale bluish green to greenish or grayish white, coarsely blotched and clouded with rufous brown and pale brownish. As a general thing the spots are more confluent and clouded and the markings coarser than in eggs of the Song Sparrow, and though resembling them in a general way can be readily distinguished, especially when compared by sets.

Nest building begins about May fifteenth, and in a week to ten days the female has finished her task, in which there is no evidence to show that the male aids her. An egg is laid each day until the set of four or five is completed, and incubation requires about thirteen days, varying from twelve to fifteen in some instances. The young are in the nest over twelve days, but under fifteen, which is the most definite I can at present give the time. In early July another brood is reared.

The food consists of beetles, worms, grubs, caterpillars, moths, flies and small snails during the summer with little vegetable matter, while in the fall and spring considerable grass seed, especially *Agrostis* and *Calamagrostis*, and some seed of the smaller *Carices* as well as other similar vegetable matter is eaten.

Genus PASSERELLA Swainson.

585. *Passerella iliaca* (Merr.). Fox Sparrow; Fox-colored Sparrow.

Plumage: above olive brown, margined or streaked with umber brown; wings and tail clove brown, but as viewed from above appearing bright rufous owing to rufous edging of primaries, rufous portions of webs of tail feathers and rufous tail coverts; under parts whitish or white, very heavily spotted and streaked with bright rufous brown and darkish except on middle of the belly. Wing 3.45; culmen 0.48; tail 2.95.

Geog. Dist. — Eastern North America west to the Plains; breeding from Newfoundland and Manitoba to Alaska; wintering from Massachusetts to the Gulf States.

County Records. — Androscoggin; common migrant, (Johnson). Aroostook; spring and fall migrant at least, and possibly (?) more than this in the Woolastook Valley, (Knight). Cumberland; common migrant, (Mead); one seen at Cape Elizabeth, December 9, 1906, (Brownson, J. M. O. S. 1907, p. 28). Franklin; rare migrant, (Swain); never seen in spring, (Sweet). Hancock; common migrant, (Mrs. W. H. Gardiner). Kennebec; very rare migrant, (Powers). Knox; migrant, (Rackliff). Oxford; migrant, very common, (Nash). Penobscot; common migrant in fall, fewer in spring, (Knight). Piscataquis; common migrant, (Homer). Sagadahoc; common spring migrant, (Spinney). Somerset; common migrant, (Morrell). Waldo; common migrant, (Knight). Washington; fall and spring, (Boardman). York; not very common migrant, (Adams).

Though seen near Bangor very seldom in open winters, the species cannot be called a winter resident as the stragglers disappear at the approach of stormy weather. Usually they appear in numbers about April first to the fifth and all have passed by before May second, appearing again in October about the fifteenth, and straggling along until November, and even December, while as before written, they have been seen in February and March in open winters, disappearing at the approach of heavy weather.

The species occurs in small flocks and by twos and threes, in roadside thickets, along the edge of woods, in hedgerows, open hard woods, clearings and weedy cultivated ground. They are rather terrestrial in feeding habits, scratching about in the leaves and undergrowth with production of a noise equal to that made by a barnyard fowl. When frightened they rise into the trees about, soon returning to feed again. Small beetles, grubs, worms, seeds of various weeds, shrubs and grasses form their diet. They rather incline to the seed side in their diet which in fall I would roughly estimate as fifty per cent seed, forty per cent insects and the balance gravel or fine sand.

In spring I have heard the males utter snatches of a sweet twittering nature, while the usual alarm cry is a "tcheep." Those who have heard the song in the northern home of this species state that it is rich, loud, full, clear and ringing, and

a pleasure to hear, but this is something yet remaining for me, neither do I know their nests and eggs. Nests have been found on the Magdalen Islands, in Newfoundland, Labrador, and Alaska. The various authorities state that the nests are placed on the ground under overhanging branches of evergreens or other shrubbery, and that grasses and moss are used in their construction. Four to five pale bluish green eggs, speckled, spotted and blotched with reddish brown or chocolate brown are said to be laid, and the average measurement is stated at 0.93×0.65 . (Davie).

Genus PIPILO Vieillot.

587. *Pipilo erythrophthalmus* (Linn.). Towhee; Chewink; Joree; Ground Robin; Marsh Robin; Swamp Robin; Towhee Bunting.

Plumage of adult male: head, throat, breast, back, rump, wing coverts, tertiaries, wing and tail black; three outer tail feathers white tipped and outer web of primaries white; sides rufous; belly white; eye red in adult males and females. Plumage of adult female: head, back, throat, breast brown, also wings and tail in juvenile females; otherwise much as in male. Immature plumage: above cinnamon brown, obscurely striped with olive brown; eye sepia brown; otherwise in general similar. Wing 3.40; culmen 0.56; tail 3.72.

Geog. Dist.—Eastern North America, west to the Plains; breeding from the lower Mississippi Valley and Georgia northward to southern Maine, Ontario and Manitoba.

County Records.—Androscoggin; rare summer resident, (Johnson). Cumberland; near Portland a few small colonies exist during the breeding season, (Norton, J. M. O. S. 1904, p. 56); rare, (Mead); a large flock, seemingly scores, was seen on top of Pleasant Mountain, July 31, 1906, (Mead, J. M. O. S. 1906, p. 114). Franklin; rare, (Sweet). Kennebec; seen at Gardiner, Nov. 21, 1906, (Dill, J. M. O. S. 1906, p. 108). Oxford; breeds commonly, (Nash). Sagadahoc; common summer resident, (Spinney). York; very abundant, (Adams).

The range of this species in Maine is restricted to the southwestern sections, and though very definite migration data is lacking, we can show that it occurs in the State from about May eighteenth until (probably very exceptionally) November

twenty-first. It is essentially a species of the bushy undergrowth and thickets, copses and scrub oaks. The general call of content or alarm is "chewink" or "towhee," while E. S. Thompson has worded the song uttered as follows:— "chuck-burr, pill-a-will-a-will-a." Though well acquainted with the habits of several western species of Towhee, the common bird of the east is not known to me save through dead specimens and nests and eggs collected by others, consequently all said herewith is the result of observations of others.

The nest is placed on the ground at the foot of bushes or shrubbery in the thickets and copses frequented by the species. A nest in my collection was taken near Haverhill, Massachusetts, May 23, 1895. It was situated on the ground in second growth oaks at the foot of a small bush. The nest was three inches deep outside by one and a half inside, the external diameter was four and the internal two and a half inches. The four eggs measure 1.03 x 0.73, 1.02 x 0.75, 1.00 x 0.73, 1.05 x 0.75. The nest is composed of rather substantial strips of bark and dead leaves lined with fine grasses. The eggs are white, thickly speckled and sprinkled with light reddish brown rather uniformly over the entire surface. Other eggs are sometimes rather more heavily and boldly spotted than these and with coarser markings about the larger ends. Three to five, more often four eggs are laid in late May in Massachusetts, probably about the first of June in Maine. An occasional nest is said to be placed in bushes, but this is exceptional.

Regarding the habits of the birds, Mr. Minot has recorded the fact that "They search for seeds and insects underneath the leaves and decayed vegetation, which they turn over by scratching, much like hens; when disturbed, leaving the ground to eye the intruder, but unless pursued, immediately returning to their former occupation." (L. B. & G. B. of N. E. p. 235). This account agrees with my observations of the quite closely related Spurred Towhee of the west.

Genus *CARDINALIS* Bonaparte.

593. *Cardinalis cardinalis* (Linn.). Cardinal; Redbird; Virginia Cardinal; Virginia Nightingale; Cardinal Grosbeak; Cardinal Redbird.

Plumage of adult male: throat, chin and region about base of bill black; other parts rosy red, the feathers above slightly tipped with grayish; crest prominent; bill red. Plumage of adult female: throat, chin and region about base of bill grayish black; crest, wings and tail red, not brilliant as in male; upper parts brownish; below buffy ochraceous, lighter on belly; bill red. Immature plumage: above more brownish; wings darker brown and with less red; only traces of black on lores and chin; wood brown below; bill pinkish buff. Wing 3.70; culmen 0.72; tarsus 0.95; tail 4.05.

Geog. Dist.—Eastern United States; breeding from Florida to Iowa and southern New York west to the Plains and resident; casual in New England.

County Records.—Kennebec; one was shot from a flock of three near Gardiner, Maine, by Homer R. Dill on December 19, 1895, and it was an adult female; through the kindness of Mr. Dill the specimen is in my collection, (Knight).

The bird taken by Mr. Dill shows no signs of having been a caged bird, and the fact that there were three of them seen together also tends to prove they were wild birds. This is the same specimen reported in List of Birds of Maine, p. 102 under an erroneous date supplied by Prof. Powers. Mr. Smith reported the species in his list as a straggler or escaped cage bird, but Mr. Dill's specimen seems to be the only one taken in the State under conditions which would seem to preclude its ever being captive.

In Kansas I became slightly acquainted with this species. In habits the Cardinal seemed to be a bird of the hedgerows, brush and brambles, hopping through the thickets and spending much time on the ground, hopping about with tail well erect. Both male and female sing, uttering a succession of clear whistled notes which are very pleasing to the ear, but difficult to transcribe to paper. The alarm note is a sharp "tchip." At the time when under my observation they were just beginning to build and both sexes were busily carrying material to the selected sites. Osage orange hedges, bramble

bushes and similar locations at heights of four to ten feet from the ground were selected as nesting sites.

The nests are built of wiry twigs, fibrous strips of bark, lined with smaller wiry twigs, grass stems and rootlets, the structure being frail and rather loose. A selected nest measures two inches in depth outside by one and a quarter inside, while the diameter is four and a quarter outside by two and a half inside. A nest which was sent me from Olathe, Kansas, was taken May 18, 1896, from a hedge, and was situated four feet from the ground. It was composed of a foundation of paper and corn leaves, lined with clover stems and fine grass. The three eggs it contained measure 0.93×0.70 , 0.94×0.70 , 0.95×0.70 . Three or four eggs are usually laid, and there are several varying types of markings. The ground color is white or bluish white. Some eggs are very finely dotted or evenly spotted all over with grayish brown, cinnamon brown or umber, and another type is blotched with large chocolate blotches or with grayish brown, chiefly about the larger ends, and between these extremes are various intermediate styles.

The food consists of various grubs, worms, beetles, seed, fruits and berries. It is reported that the male helps in feeding the female while incubating and also in taking charge of the young when a second brood is being hatched by his mate. Olive Thorne Miller attempts to describe the song of the Cardinal as follows:—"He is a famous singer, his song being a loud, clear whistle, into which enters quite frequently the sound of q!q!q! and a peculiar long drawn out e-è! sometimes syllabled as "three cheers!" (B. E. N. A. p. 311.)

Genus ZAMELODIA Coues.

595. *Zamelodia ludoviciana*. (Linn.). Rose-breasted Grosbeak; Throat-cut.

Plumage of adult male: upper breast and under wing coverts rose red; head, throat, wings, tail and back black; outer tail feathers white on inner web, and primary wing feathers white at base; rump white toward back,

black at rear; belly white. Plumage of immature male: under wing coverts red; wing bands buff; wings and tail black; head, neck and back brown, streaked with black; throat and sides brownish, streaked with black; otherwise similar to adult. Plumage of female: brownish above, streaked with dusky, more or less margined on feathers with buffy; whitish line over eye and buffy line through center of crown; wings and tail grayish brown, the wing coverts white tipped, two nearly white wing bars being present; under wing coverts orange; below more or less buffy, streaked with dusky. Wing 4.00; culmen 0.70; tail 3.20.

Geog. Dist.—Eastern North America, west to Manitoba and the Plains; breeding from Kansas and the higher mountains of the Carolinas north to New Brunswick and Manitoba; wintering in Central and South America.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; rather common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 148); not known by me save in the southern half of the county and very local there, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Richards). Hancock; rare, (Dorr). Kennebec; common summer resident, (Gardiner Branch). Knox; rare migrant, (Rackliff). Oxford; common breeder, (Nash). Penobscot; rare summer resident in southern section, but locally common in northern sections, (Knight). Piscataquis; not uncommon, breeds, (Homer); locally common in the Pleasant River Valley, (Knight). Sagadahoc; five specimens, (Spinney). Somerset; not common resident, (Morrell); locally common in Moose River region, (Knight). Waldo; very rare summer resident, (Knight). Washington; rare summer resident, (Boardman). York; quite abundant, (Adams).

In spring the species appears in Maine from May sixteenth to the twenty-first and the last stragglers seem to be gone in late August, August twenty-seventh being the latest at Bangor that I have seen the species. The distribution in Maine is peculiar in that the species is rare along the coast and in certain of the central portions of the State, while north it again is locally common. South and west of the Kennebec River it is reported as common to fairly common. After crossing the Kennebec River the species becomes rather rare in southern Somerset and southern Penobscot County. East of the Penobscot River it is equally rare until near Carroll, Winn and Danforth, when the species is locally common to our eastern boundaries. While usually rare in southern Penobscot County, only an occasional specimen being seen as a rule, there occur times at intervals of twenty years or so when it is common.

For example, in late May, 1906, the species was common near Bangor in migration and not rare throughout the summer, while about twenty years ago the same condition prevailed. From Franklin County eastward, through central and northern Somerset, southern Aroostook and northern Penobscot the species is locally common clear to the eastern boundary. The *extreme* upper Woolastook waters, Pleasant River and Piscataquis Valleys are centers of northern abundance as also the Aroostook Valley about Fort Fairfield. It seems quite probable indeed that these northern representatives of the species enter the State from the west and pass across it by some regular migration route.

With us the species frequents rather open hard wood thickets along the river bottoms and by the roadsides, and less frequently in southern sections the orchards and groves about the farms. In northern Maine it is a bird of the river valleys. The song of the male is pleasing and very characteristic, utterly different from that of the Robin and Catbird but having a twang to it that reminds me of these other songsters. The alarm call is a harsh "chink" or "preek."

At nest building time the female seems to do all the work while the male sings very constantly, being answered by others of his kind that are within hearing. In fact the only part the male ever seems to do, as far as I have observed, is to help feed the young birds. The nest is placed in trees, bushes and shrubbery at heights ranging from five to fifteen feet from the ground. A typical nest in my collection is composed of stems of *Aster*, twigs of *Diervilla*, and it is lined with finer plant and grass stems, being quite frail and slight, yet firm. This nest is three inches deep externally by one-half inch inside, while the outside diameter is five and the inside two and a half inches. The eggs it contained measure 0.97×0.67 , 0.95×0.68 , 0.94×0.70 , 0.91×0.70 . Three or four eggs are usually laid, and more rarely five. They are greenish blue color, more or less spotted with olive or reddish brown. In some types the

markings are thickest and largest about the larger end, while other eggs are rather evenly marked all over. June tenth to June thirtieth is the usual date to find eggs in Maine.

The food of the species is quite variable. I have known them to eat such things as beetles, tent-caterpillars, canker-worms, larvæ of *Vanessa antiopa*, the fat red slugs of the Colorado potato beetle as well as the beetles themselves, moths of various sorts, chiefly *Noctuidæ*, and in fact almost any kind of insects available. They have been frequently reported as eating potato bugs and their larvæ, and even feeding their young on these. In season they eat various wild fruits and berries such as bird cherry, choke cherry, bunch-berry, dog-wood plums, arrowwood fruit, etc. Various kind of seed are also eaten. In other states they have been accused of eating cultivated fruit and berries but do not seem so inclined in Maine, neither do they frequent localities where they would have this opportunity with us.

Genus CYANOSPIZA Baird.

598. *Cyanospiza cyanea* (Linn.). Indigo Bunting; Indigo Bird; Indigo Painted Bunting.

Plumage of adult male in summer: lores, wings and tail blackish, the two latter margined with blue; otherwise on upper and lower parts rich blue. Plumage of adult male in winter: above the blue more or less covered up or veiled by brownish; below likewise more or less concealed by a lighter shade of brown; wings and tail blackish edged with blue; chin and abdomen nearly white; otherwise much like adult. Plumage of females and immature: above grayish brown; wings and tail fuscous, not at all or only slightly margined with bluish; wing coverts margined with grayish brown; below whitish, washed with gray brown and streaked with brownish. Wing 2.65; culmen 0.40; tail 2.25.

Geog. Dist.—Eastern United States, west to Kansas, north to New Brunswick, Ontario and Minnesota; wintering in Central America.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; seen near Caribou, (Allen, J. M. O. S. 1901, p. 12); occasional in southern sections, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; rare, (Dorr). Kennebec; common summer resident, (Gardiner Branch).

Knox; rare migrant, (Rackliff). Oxford; fairly common summer resident, (Johnson). Penobscot; not very common summer resident southward, slightly more frequent northward, (Knight). Piscataquis; summer resident, not common, (Homer). Sagadahoc; not common, seen in June, (Spinney). Somerset; rare summer resident, (Morrell); slightly more frequent in northern section, (Knight). Waldo; rare summer resident, (Knight). Washington; not uncommon summer resident, (Boardman). York; quite abundant, breeds, (Adams).

The migration dates given by Mr. Brown as about May fourteenth to twenty-third for time of arrival and September eleventh as time of departure seem to cover the situation very completely. The species is of very peculiar local distribution in sections outside of Androscoggin, Franklin, Cumberland, York and Oxford Counties, as while in the portions of these counties comprising in general southwestern Maine the species is rather common, it is elsewhere local. Though not anywhere as near a common species as the Rose-breasted Grosbeak, its local distribution in the northern portion of the State is along about the same general territory.

The species prefers bushy clearings, low second growth thickets and old pastures. The male sings constantly, and while the song is not unpleasing it lacks loudness and impressiveness, being in fact rather "warbler-like" in many ways. There is a peculiar nervous habit of twitching tail and wings as they perch on the bush tops and spring from one to the other, which is also "warbler-like," while the "chip" of alarm is similar to that of a Warbler.

The nest is placed in thick bushes in the pastures and clearings, usually not over four to eight feet from the ground. A typical nest was placed in a blackberry bush one foot from the ground, and was composed of leaves, fine bark strips and vegetable fibers, lined with wool and grass. The depth of the nest outside was two and a half and inside two inches, while the diameter outside was three and a quarter and inside two and a half inches. Four eggs of the Bunting and one of the Cowbird were found; the Cowbird's egg measures 0.90 x 0.65,

while the Bunting's eggs measure 0.74×0.54 , 0.70×0.54 , 0.70×0.55 , 0.72×0.54 , and their color is pale bluish white. This set was not collected in Maine, but nests and eggs I have seen from near Bangor in the collections of others were similar in every way. Fresh eggs may be expected here from late June to even July fifteenth.

The food is about equally proportioned in summer between insects and seeds, while in fall it is chiefly seeds. Seeds of golden-rod, aster, thistle and other Composites, as well as grass and weed seeds, and the usual variety of grubs, beetles, green caterpillars, flies and similar things make up their food.

Genus *SPIZA* Bonaparte.

604. *Spiza americana* (Gmel.). Dickcissel; Black-throated Bunting; Little Field Lark; Judas Bird.

Plumage of adult male: yellow line over eye and on side of throat; forehead tinged yellow; black patch on throat; chin and belly white; head and side of neck ashy gray; back streaked black and grayish brown; wings and tail fuscous; breast yellow. Plumage of female: no black patch on throat; head grayish brown, streaked with blackish; otherwise similar to male. Immature plumage: everywhere tinged with dull buffy, otherwise much like female. Wing 3.10; culmen 0.50; tail 2.40.

Geog. Dist. — Eastern United States, chiefly in the Mississippi Valley, but west to the Rocky Mountains; breeding from Texas to Massachusetts, New York, Ontario, and North Dakota; wintering in Central and South America; rather rare east of the Alleghany Mountains.

County Records.—Cumberland; a specimen, a young male, taken at Westbrook by Ralph H. Norton, October 10, 1888, (Norton, J. M. O. S. 1904, p. 57, also Auk. 10, p. 302 and 11, pp. 78-79). Knox; one taken by Fred Rackliff at St. George, (Rackliff); one taken on Job's Island, Camden, September 29, 1884, a young male, (Townsend, Auk 2, p. 106).

The species is only a straggler here and does not breed in Maine, and only a few instances are known of its breeding in Massachusetts. A nest taken at Dubuque, Iowa, June 22, 1894, is a rather large compact structure of grasses and weed

(Foot note.—*Cyanospiza ciris* (Linn.) the Painted Bunting has been taken at Portland, June 10, 1904, but the specimen, an adult male, was unmistakably an escaped cage bird, (Norton, J. M. O. S. 1904, p. 66).

stems and grape vine bark, lined with fine grass. It was situated in a blackberry bush in a ravine near a grain field and contained three eggs of the rightful owner and two eggs of the Cowbird. The Cowbird's eggs measure 0.85×0.65 , 0.86×0.66 and the Dickcissel's eggs measure 0.81×0.63 , 0.85×0.62 , 0.80×0.63 .

Three to six, generally four or five eggs are laid and these are plain pale blue, unspotted. The nests are variously situated on the ground, in bushes, or even in trees up to twenty feet from the ground. Nests on or near the ground seem more frequent.

Two broods are said to be reared each season, the first eggs being laid in May and the second laying from late June to early August.

Pastures and fields are their favorite haunts and the males, at first sight resembling male English Sparrows, may be both seen and heard as perched on the grass tops or in bushes or trees or on a fence rail they utter their monotonous song. Minot describes the song as resembling the syllables "chip, chip, che, che, che" the first two words uttered slowly and the last three very rapidly. The food consists of seeds and insects of the same general character as eaten by the Indigo Bunting.

Family TANAGRIDÆ. Tanagers.

Key to the species of TANAGRIDÆ.

- A. Wing marked with two light bands or bars across the tips of the middle and greater coverts.
 - 1. Plumage chiefly red and black. Louisiana Tanager (male).
 - 2. Plumage chiefly olive green and yellowish. Louisiana Tanager (female and immature).
- B. Wing not crossed by bands.
 - 1. Plumage partly or wholly red.
 - §. Plumage wholly red or *without* any black. Summer Tanager (male).
 - §§. Plumage not wholly red; wings and tail black. Scarlet Tanager (male).

2. Plumage without red.

§. Under wing coverts white; under parts yellow, tinged with greenish. Scarlet Tanager (female and immature).

§§. Under wing coverts buffy yellow; no greenish tinge to under parts. Summer Tanager (female and immature).

Genus *PIRANGA* Vieillot.

607. *Piranga ludoviciana* (Wils.). Louisiana Tanager; Western Tanager; Crimson-headed Tanager.

Plumage of adult male: wings with two broad yellow bands; rump and lower parts yellow; back, scapulars, wings and tail black; head and neck red or orange. Plumage of adult female: grayish olive green above; wing bands yellowish white; grayish yellow below. Immature plumage: streaked with dusky above and below, otherwise like female. Wing 3.80; tail 3.40.

Geog. Dist.—Western North America, north to British Columbia, east to the Plains; wintering south to Guatemala; accidental in Maine, Massachusetts, New York and Connecticut.

County Records.—Penobscot; an adult male taken near Bangor, about October 1, 1889, was sent to S. L. Crosby and there seen in the flesh and compared with authentic specimens by Manly Hardy, (Hardy, List Birds of Maine, p. 104).

In the west and especially in some sections of California and Oregon this is a common species, placing the nests preferably in the branches of evergreen trees at heights usually under thirty feet from the ground on the horizontal lower branches. Three to five, usually four eggs are laid and these are light bluish green, finely sprinkled about the larger end with grayish and clove brown.

A nest, sent me from Oregon, was taken at Portland, June 25, 1894. It was placed on the horizontal limb of a pine tree twenty-five feet from the ground, and was composed of roots, twigs and lined with horsehair. It was a rather frail structure two and a half inches high outside and two inches deep inside, the external diameter four and internal diameter two and a half inches. It is lined heavily with hair and rather better built than the usual nest of the Scarlet Tanager. The eggs measure 0.94 x 0.68, 0.93 x 0.66, 0.91 x 0.66. In southern California I often saw the species feeding on various insects

which they gleaned from the foliage but can say nothing definite as to the exact nature of these insects.

✓ 252. *Piranga erythromelas* Vieill. Scarlet Tanager; Pocket Bird.

Plumage of adult male in summer: under wing coverts white; wings and tail black; otherwise bright scarlet. Plumage of adult male in winter: wings and tail black; upper parts light olive green; under parts greenish yellow; under wing coverts white. Plumage of female: under wing coverts white; upper parts light olive green; wings and tail fuscous; yellow with greenish tinge below. Wing 3.70; culmen 0.56; tail 2.98.

Geog. Dist.—Eastern United States, west to the Plains and north to New Brunswick, southern Ontario and Manitoba; wintering in Mexico, West Indies, Central and northern South America.

County Records.—Androscoggin; rare migrant, (Johnson). Aroostook; rare at Houlton, (Batchelder, B. N. O. C. 7, p. 111); generally rather regular in southern sections, (Knight). Cumberland; rare, (Mead). Franklin; rare summer resident, (Swain). Hancock; summer resident, (Dorr). Kennebec; very rare summer resident, (Robbins). Knox; rare migrant, (Rackliff). Oxford; breeds, (Nash). Penobscot; usually rare in southern sections but occasionally sporadic and common, as in spring of 1906, while in northern section it is usually regular but rare, (Knight). Piscataquis; rare, breeds, (Homer); three found dead near Milo, May 29, 1906, (Cooper). Sagadahoc; four specimens in spring, (Spinney). Somerset; it occurs in the northern sections and is probably regular though rare, (Knight). Waldo; rare, (Spratt); quite a few in late May, 1906, (Knight). Washington; rare summer resident, (Boardman). York; rare, sometimes breeds, (Adams).

In spring they usually arrive about May thirteenth to twentieth, according to season and depart about the middle of September. As a general rule the species is rare in Maine, but in late May, 1906, there was a regular influx of individuals through the Penobscot Valley and in other sections of the State.

Though rarer than the Rose-breasted Grosbeak, the distribution of the Tanager is very similar, it being inclined to occur most regularly in the same general regions as the Grosbeak does. Their ordinary call is a harsh "chip-chir-r-r" I have never happened to hear one sing but the song of the male is described reminding one of the notes of the Robin or Rose-breasted Grosbeak, though having also a harshness of tone.

Their food consists of beetles, caterpillars, flies, lice, grubs, and similar insects found in the foliage of the thickets and hard wood growth which they seem to prefer, in general selecting about the same sort of habitat as the Rose-breasted Grosbeak. In late summer and fall they are also seed and berry eaters.

In Maine the nests are ready for eggs from the middle to the last of June. The nest is composed of fine twigs, plant and grass stems, lined with fine rootlets and twigs, and it is rather frail and open but still stiff and strong. The usual nesting site is the horizontal limb of a tree at heights of six to fifty feet in hardwood growth.

A nest found seven feet from the ground on the limb of a white oak in shady woods at Dubuque, Iowa, June 1, 1893, was sent me by the collector. This nest is two inches in height outside by one inside, its outside diameter is four and its inside diameter two and a half inches. The eggs measure 0.90 x 0.66, 0.92 x 0.69, 0.90 x 0.68, 0.89 x 0.68. Three to five, usually four eggs are laid and they are rather pale greenish blue, spotted with rufous and brownish markings. The markings are generally most abundant at the larger end, often forming an open wreath. Observers state that in general the female does all the work of nest building and incubation.

610. *Piranga rubra* (Linn.). Summer Tanager; Summer Redbird.

Plumage of adult male: wings fuscous, margined with red; otherwise wholly red. Plumage of immature males: varying from that described below for the females through mixtures of red to full adult plumage. Plumage of females and immature: ochraceous olive above; yellowish orange below. Wing 3.70; culmen 0.85; tail 3.00.

Geog. Dist.—Eastern United States, west to the Plains, north to southern New Jersey and southern Illinois; casual in Massachusetts, Ontario, Maine, New Brunswick and Nova Scotia; wintering from Cuba and eastern Mexico to northern South America.

County Records.—Lincoln; the specimen so doubtfully cited by Mr. Smith in his list as being of this species is at present in the Bowdoin College collection, and has been identified by Mr. Brewster who states that it is positively a Summer Tanager; it was taken at Wiscasset.

Only once has this species occurred in Maine to our knowledge, and Mr. Boardman also once took a specimen in *New Brunswick*. It is a species of rather open mixed woods having an undergrowth of oaks and is not rare in the more southern States. I have never seen the species in life. Chapman describes its cry as "chicky-tucky-tuck" and states that its song is similar to that of the Scarlet Tanager, but sweeter and less forced.

The nest and eggs are very similar and similarly situated to those of the Scarlet Tanager. Four eggs sent me from Anderson, South Carolina, were said to have been taken from a nest composed of weeds, grass and vines, lined with fine yellow grass. The eggs are bluish green, spotted and dotted with brownish purple and dark brown or rufous. The spots are generally most numerous about the larger end and often wreathed. My South Carolina set measure 0.96×0.69 , 0.99×0.68 , 0.95×0.64 , 0.90×0.64 . Three to five, usually four is the number laid. The food is said to consist of various insects, seeds, fruits and berries, and is probably very similar to that of the Scarlet Tanager.

Family HIRUNDINIDÆ. Swallows.

Key to the species of HIRUNDINIDÆ.

- A. Under parts pure white, unmarred by bands or markings. Tree Swallow.
- B. Under parts only partly white or with no white at all.
 - 1. Under parts entirely steel blue. Purple Martin (male).
 - 2. Under parts not entirely steel blue, various mixtures of white, gray or other dull colors.
 - §. Upper parts without metallic reflections; brownish gray band across breast; throat and belly white. Bank Swallow.
 - §§. Upper parts with metallic reflections.
 - ? Throat and breast gray with brownish tinge. Purple Martin (female).
 - ?? Throat and breast not both gray.
 - a¹. A rufous or buffy patch on rump or upper tail coverts rufous or buffy. Cliff Swallow.
 - a². No rufous or buff on rump or upper tail coverts, these portions same color as back. Barn Swallow.

Genus PROGNE Boie.

611. *Progne subis* (Linn.). Purple Martin; Martin; Black Martin; House Martin; Cape Cod Swallow.

Plumage of adult male: glossy blue black. Plumage of adult female: above similar to the males but duller and less glossy and wings and tail dull black; throat, breast and sides brownish gray, feathers somewhat slightly white tipped; belly white; under tail coverts smoke gray with whitish edgings. Immature plumage: feathers of chin, lower breast and abdomen with narrow dusky shaft streaks, otherwise quite similar to adult female. Wing 5.90; tail 3.00; tail forked about 0.85 deep.

Geog. Dist.—Temperate North America, breeding from Texas to Ontario, the Saskatchewan, New Brunswick and Nova Scotia; wintering in South America.

County Records.—Androscoggin; abundant summer resident, (Johnson). Aroostook; seen at Fort Fairfield and Houlton, (Batchelder, B. N. O. C, 7, p. 110); they nest on my premises at Presque Isle, (Smith). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; local but where found common summer resident, (Knight). Kennebec; very rare summer resident, (Larrabee). Knox; summer, (Rackliff). Oxford; common breeder, (Nash). Penobscot; very locally distributed, less common than ten years ago, still decreasing, but found as yet in local abundance in a few places, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; (Spratt). Somerset; common summer resident, (Morrell); not known by me in northern wilderness, (Knight). Waldo; locally common in summer, (Knight). Washington; common summer resident, (Boardman). York; common summer resident, (Adams).

Mr. Brown gives the date of their arrival at Portland as about the last of April, earliest April twenty-second, while at Bangor the date of arrival can be almost surely counted on as April thirtieth, or at latest May first, save in very abnormal and backward seasons, such as 1906, and the very latest date I have access to of their arrival here is May fifth. The latest date of departure is September fourth, but they are more often gone by August twenty-fifth.

As is well known, these birds nest in small colonies in the houses erected for them by benevolently inclined persons, and the number of pair of birds in a colony varies from five to ten, more or less, according to the accommodations provided for

them. Of course on their arrival they find the English Sparrows in full possession of their homes, and a pitched battle ensues, sometimes ending in the ousting of the Sparrows in a few hours and again the fight may continue for two or three days at intervals before the Sparrows have been ejected, but in all my experience the Martins have proved victorious every time but once, when they failed to gain possession of their former home and left it for the season in possession of the Sparrows, but the following year they again returned and regained possession.

After the battle, the Martins busy themselves in throwing out the mass of hay, feathers and trash left by the Sparrows and incidentally any eggs or young which may be there. In fact the duration of the battle waged with the Sparrows depends much on the contents of their nests, as if there are neither eggs or young the Sparrows do not fight long for possession, while if young Sparrows are in the nest then the fight is protracted. When the house has been cleaned by the Martins they do not seem to be in a very great hurry to start to nesting. I could never satisfy myself that a second brood was reared and think that only one brood is reared in Maine, but the time when fresh eggs may be observed varies from June fifth until July fourth. My observations on these birds at Marlin, Texas, in 1891, indicated that even in their southern range fresh eggs were the rule on May twenty-fourth.

Both birds take part in building the nest of twigs and grass or straw, lined with finer grass and feathers. Their comings and goings are announced by a great variety of harsh, loud twitterings and warblings; in fact the Martin is a noisy bird, both when on the wing and more particularly when at home. A common call is "pio, pio, pio" or a twittered "puttr-puttr-peek-we-o" or a harsh "ack-ack-ack," also a great variety of twittered sounds put together so that it might be called a song. Nest building may take from five days to three weeks, or at least it is that length of time after they first begin to carry

material before eggs are laid. Incubation is done by both sexes and seems to require sixteen days, as nearly as I have been able to determine, but the error owing to lack of sufficiently frequent observation may be a day either way. The old birds are busy indeed after the young appear. The young leave in about sixteen to eighteen days, and it is indeed a noisy session that is held as they venture out of their apartment to the outside of the house and, encouraged by the old birds, make short flights.

The species is essentially a bird of civilization at present, and in Maine occurs only near human dwellings, and is of local distribution. Before the advent of man they must have nested in hollow trees, though none do now. It seems probable that the species has gradually advanced throughout the State with the tide of civilization, or at least it did advance until the importation of English Sparrows forced it backward again. It is found in almost every section of the State, locally, though absent from many localities where it ought to occur. The food consists of insects and is practically all taken on the wing by these aerial birds. They skim along, now high in the air, again close to the surface of the water or over the grass tops in the fields, catching beetles, moths, flies, winged ants, mosquitoes, butterflies and a similar variety of winged insects. Their presence is therefore distinctly beneficial.

Three to eight pure white eggs are laid, but the usual number is four or five. A set of seven measure as follows:—0.94 x 0.69, 0.91 x 0.68, 0.90 x 0.68, 0.89 x 0.68, 0.91 x 0.68, 0.89 x 0.66, 0.88 x 0.66.

Genus PETROCHELIDON Cabanis.

612. *Petrochelidon lunifrons* (Say). Cliff Swallow; Republican; Eave Swallow; Mud Swallow.

Plumage of adults: crown and back steel blue, very slightly or not at all streaked with white; forehead whitish; throat and sides of head chestnut; grayish ring around neck; upper tail coverts rufous, forming a distinct

patch on rump; wings and tail clove brown; belly white. Immature plumage: chin and upper throat mixed white, black and cinnamon rufous; duller above than in adults, otherwise similar. Tail feathers about equal length, or in other words, tail not forked.

Geog. Dist.—North America, north to Labrador and the Arctic Ocean in the interior, breeding from southern Arizona, southern and Lower California and Texas northward; seemingly absent from Florida and the West Indies; wintering in Central and South America.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; locally common summer resident from the southern sections to the Woolastook Valley, being a bird of civilization, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, both on the outer inhabited islands of the coast and inland, (Knight). Kennebec; very common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford, common, breeds, (Nash). Penobscot; locally abundant summer resident, a bird of civilization, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; locally common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; common summer resident, (Adams).

The earliest date I have ever seen the species at Bangor was April eleventh, which was very exceptional, though on occasions I have seen individuals April twentieth to twenty-sixth, and it is generally about Bangor by May first to third, and the latest I have known them to remain is September fourth. Mr. Brown gives the dates for Portland in his list as about May tenth to fourteenth to September sixth. Though my Bangor dates run earlier than nearly all other New England records, I cannot explain the cause, neither is there any mistaking the identification of this species with its prominently blotched rump of rufous.

On May 20, 1908, at Northwest Carry, I noted a colony of these birds nesting and the nests were already half completed, while the next day at the Pittston Farm I saw another colony whose nests were well along toward completion, indicating an early arrival there.

They nest in colonies, building the well known flask or retort shaped nest of pellets of mud and clay, which in the east is always placed under the eaves of some building such as

a barn or house and more seldom under the eaves of a bridge over the water. Sometimes hundreds of these nests may be seen under the eaves of a large barn, but more usually a colony consists of five to forty pair.

The neck of the nest is variously finished, sometimes being three or four inches long, at other times practically no neck is made. After the neck of the nest is passed it widens into a chamber lined with dry grass and feathers, and here the eggs are laid. These are three to six, more generally four in number, white in color, variously specked, blotched and dotted with reddish brown, or cinnamon brown and some eggs also have clouded markings of lilac or lavender. The spots are more numerous about the larger end as a rule, sometimes rather inclined to be wreathed, though in some cases eggs are more sparsely and evenly spotted all over. A typical set of eggs taken at Six Mile Falls, Maine, June 10, 1893, measure 0.84×0.59 , 0.84×0.58 , 0.83×0.58 , 0.83×0.60 , 0.82×0.60 .

Even in the same colony the time of laying is variable, eggs being found from as early as June first up to July second. In general nests I have watched in process of construction require from ten to twenty days to finish, seemingly dependent on weather conditions, the nearness of a supply of mud, and other details.

These birds can often be seen in small groups about a muddy spot in the road, deftly perching and gathering up small pellets which they work in their mouths. They are rather inclined to nest in localities not far distant from water, but prefer to utilize the mud of roads and farmyards when there is sufficient moisture to render it available. Both sexes work on the nest, one leaving for material as the other arrives with a load, or sometimes one bird seems to bring and leave material to be utilized by the other.

An egg is laid each day and incubation requires about fourteen days. The young are in the nest sixteen or seventeen days. Both sexes incubate and care for the young.

In California I have seen colonies of thousands of these birds nesting on the face of cliffs, and sometimes a dozen of the nests were plastered one on another in a bunch so that of some nothing but the opening was visible. This was the original nesting habit of the species before the advent of civilized man. The species has gradually extended its range eastward, and though it is difficult to get exact facts it seems very likely that it was not known in New England until subsequent to the year 1800, and probably much later even than this.

In my boyhood days it was rare about Bangor, now locally it is common, or abundant. Only one brood is reared annually here. In late summer they gather on the telegraph wires along the highways, the young trying their wings from time to time, and I have also seen them perched along the ridgepole of a barn in a similar way. There are several calls or notes which are uttered, including a sharp, angry twitter when the nest is endangered, the twittered conversation that goes on among the members of a colony when at home or out feeding, and the call with which a bird greets its mate on arrival home. These are all too difficult to reproduce on paper, though characteristic.

The food consists entirely of insects and the same varieties of winged insects are taken as form the food of the Purple Martin. They feed in a similar manner, skimming along the surface of the water or over the fields or high in air. Numerous flies and mosquitoes as well as other winged insects about the barnyards are eaten, so that the presence of these birds is distinctly beneficial. Of course they are a source of disfigurement and dirt when they occupy the eaves of a house, but on the average barn they can do no harm. Their nests often contain bird lice, ticks and an insect which to my eye appears exactly like a bedbug and smells like one, too. These insects are parasitic on the Swallows. The same buildings are occupied by a nesting colony season after season, and sometimes the old nests are patched up by their former owners or by other individuals, which, I cannot say.

Genus *HIRUNDO* Linn.613. *Hirundo erythrogaster* Bodd. Barn Swallow.

Plumage of adults: tail deeply forked and with white spots on inner webs of all but middle feathers; upper parts glossy steel blue or iridescent green; forehead, throat and upper breast chestnut; under parts otherwise white, more or less washed with chestnut; tail forked for nearly two inches. Immature plumage: fork of tail only about an inch deep; forehead russet; chin and throat russet tinged; in general very similar to adults. Wing 4.75; tail 3.80, forked for nearly two inches in adults.

Geog. Dist.—North America, breeding from Lower California and Mexico to the Fur Countries; wintering in Central and South America; in migration found in West Indies.

County Records.—Androscoggin; abundant summer resident, (Johnson). Aroostook; locally common throughout the county, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common local summer resident, also found even on the outer inhabited islands, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common to abundant locally and summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; common summer resident, (Adams).

The usual time of arrival near Bangor is April twenty-fifth and the time of departure about late August, occasionally a few seen as late as September fifteenth. They nest almost entirely in barns, placing their nests on or against beams and timbers. The nests are composed of pellets of mud gathered in the same places as the Cliff Swallows obtain their supplies, and in fact a few Barn Swallows may often be seen mingled in a mid-highway group of the former about a mud puddle. The Barn Swallow, however, makes a normal shaped nest, not roofing it over.

One type of nest is half-saucer shaped and supported against the side of a beam, while another type is placed on top of a beam and is round. A lining of straw, fine grass or feathers completes the nest. The species is not as socially inclined as the Cliff Swallow, only a few pair nesting in a barn. The

most I have noticed in one building is ten pair, while more often only one or at most two or three pair are found together. Nearly every good sized country barn whose interior is readily accessible is occupied by these birds, and they may be sought in such localities practically throughout the State. They do not seem to frequent or build in city barns.

I found a couple of pair nesting in an unoccupied hut on Seal Island in July, 1893, and saw what was most certainly a nest of this species there another year attached to the side and on the shelf of a steep, rocky face of a low cliff. Near San Diego, California, on April 23, 1892, I found this species nesting generally in the roofs of caves along the ocean side of Point Loma, so that the Seal Island instance for Maine is not exceptional.

Eggs may be found from about June fifth up to July first, mid June being about the right date here. Both birds help to build the nest, incubate and feed the young. Though I can offer nothing definite as to time of incubation, the young remaining in the nest, etc., yet general observation would indicate that the period does not differ from that of the Cliff Swallow.

The song of this species as it flies contentedly about the barn yard and sails over the water or fields or high in air is a peculiar wiry, yet lullaby-like twitter, hard to describe but readily recognized. When their home is in danger they swoop down at the intruder, uttering loud, angry calls of two or three notes. Their food consists of insects taken on the wing and is practically identical in every way with that of the Cliff Swallow. The general habit of congregating on the barns and along the highways on telegraph wires in late summer is followed by this species.

The eggs are three to six, usually four in number. They are white, spotted with cinnamon, olive or rufous brown and occasionally with lilac or lavender in clouded spots. The spots or blotches on some eggs are more numerous or wreathed

about the larger ends, in others more or less evenly scattered over the surface, and they are to all intents and purposes indistinguishable from the eggs of the Cliff Swallow. Four in my collection measure 0.76×0.57 , 0.77×0.57 , 0.74×0.54 , 0.73×0.56 .

Genus IRIDOPROCNE Coues.

614. *Iridoprocne bicolor* (Vieill.). Tree Swallow; White-bellied Swallow; White-breasted Swallow; Little Martin.

Plumage of adults: iridescent green or steely blue above; white below; tail only very slightly forked and fork barely or not at all noticeable. Immature plumage: sooty brown above; white below with a very faintly indicated sooty collar on throat. Wing 2.40; tail 2.40.

Geog. Dist. — North America, breeding from Labrador and Alaska to New Jersey, Kansas, Colorado and California; wintering from South Carolina and the Gulf States to the West Indies and Guatemala.

County Records. — Androscoggin; tolerably common summer resident, (Johnson). Aroostook; locally common summer resident, throughout, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; locally common summer resident even on the islands, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; common local summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; common summer resident, (Adams).

In general this is the first species of Swallow to arrive, appearing sometimes as early as April first, more generally about the tenth to twelfth, and remaining until the last of August or even rarely as late as September twenty-fifth.

The species is less distinctly gregarious than the other Swallows, nesting more often by scattered pairs, though in favorable situations about a pond many are often found within a given territory. They however nest by solitary pairs, taking a natural cavity in a stub or tree, or occupying an old woodpecker's hole, and by preference in many cases the stub selected is actually standing in the water, while otherwise it is close to

the shore of a river, stream, pond or lake in a large majority of cases. While a majority prefer such localities which were probably their natural homes, others have broken away from what seems to have been the ancient habitat. As a result the species nests in holes in trees in orchards, in hollow fence rails and stumps by the roadside and along field lines, in crevices in barns, bridges and buildings and in cigar boxes, tin cans, or other more elaborate bird houses put up for them by kindly disposed human beings. I once found a nest in the tank of an old disused locomotive.

Both sexes aid in nest building. I have often, when a pair were skimming about over the water near to their selected nesting site, provided myself with a quantity of white feathers and tossed these one by one to the breeze. These were quickly pursued and grabbed by one or both birds, even six or seven being taken one after another by the same individual until it had so many in its beak that it repeatedly lost some in the effort to get more. Finally the load so gathered would be taken to the nest. Even when they had fair sized young in the nest I have found them unable to resist the temptation to add more material of this sort to it.

The nest is composed of a little grass or straw, generally very warmly lined with feathers of various colors, but white feathers predominate and the birds seem unable to resist the attraction offered by downy white feathers. The male does his share of incubating and feeding the young and also often feeds the female while she is on the nest. Incubation requires about fourteen days and the young leave in about sixteen days after they are hatched. There seems to be partial evidence tending to show that a second brood may be reared but I am rather inclined to think that sets of eggs found in July are not second broods in the true sense of the word, but rather cases where for some reason they had not reared a brood previously and were keeping up an effort to do so. I know that when robbed the birds will nest again and repeatedly until successful

in hatching, and often the same nest is reoccupied not only for a fresh laying but season after season as well. Four to ten but more usually five or six pure white eggs are laid. Six taken at Orono, June 11, 1894, from a hole in a stub six feet from the ground measure 0.78×0.57 , 0.76×0.56 , 0.78×0.56 , 0.71×0.55 , 0.75×0.56 , 0.75×0.56 .

The food consists of the same general run of insects eaten by other related species and are skimmed up as they sail along through the air and over the water. I have sometimes seen them pick up insects from the surface of the water as they lightly skimmed by. In the south they have been reported as eating bay berries. Though more silent as a rule than the other Swallows, they utter characteristic twitters of alarm and anger and also there is a low call with which a bird greets its mate, I think it is the call uttered by the male to the female. In fall they may be seen perched in a loose gathering on the stubs about the water and more rarely along the roadsides with the other species. In the nesting season one or both birds may often be seen perched on the stub which is their home, taking short flights and returning, and even while incubation is proceeding the eggs are left unguarded frequently for short intervals.

Genus RIPARIA Forster.

616. *Riparia riparia* (Linn.). Bank Swallow; Sand Swallow; Sand Martin.

Plumage of adults: a brownish gray band across breast and along sides; upper parts same general color but darker on head and wings and lighter on rump; tail appearing above indistinctly barred. Immature plumage: above mouse gray, the feathers edged with pale drab; wing coverts and tertiaries edged with pale cinnamon; tail without the faint barred appearance; otherwise very similar to adults. Wing 4.00; tail 2.00; tail rounded, only slightly forked.

Geog. Dist.— Northern Hemisphere; in America breeding from the middle districts of the United States northward to Labrador and Alaska; wintering in Central and South America to Brazil.



NEST AND EGGS OF THE BANK SWALLOW.
BANK SHOWING BURROWS OF THE BANK SWALLOW

Photograph by Ora Willis Knight.

County Records.—Androscoggin; abundant summer resident, (Johnson); Aroostook; very local but scattered in colonies in various sections of the county, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common on many of the islands and along the coast, also inland, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Lincoln; breeds at Damariscotta, (Berry, Oologist, 1888, p. 175). Oxford; common breeder, (Nash). Penobscot; abundant local breeder, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common local summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; common summer resident, (Adams).

Near Bangor the species usually arrives about April nineteenth to the twenty-fifth, occasionally a little later and remains until the last of August, the very latest date I have being September first, though near Westbrook there is a recorded date of September nineteenth, (J. M. O. S. 1906, p. 64). The species congregates in large colonies, sometimes colonies of a thousand or more nesting in the perpendicular face of a sand bank, while at other times only a few pair are together, the relative numbers in a colony depending on the suitable available nesting space, in some instances at least. Originally the faces of sand banks along the shores of a river or stream and along the seacoast were the chief available situations, but since the advent of civilized man and the establishing of various places for getting sand and gravel with the consequent production of available perpendicular banks all over the country, the birds may be found nesting wherever suitable sites occur, often far from the water.

To start a nest the bird alights and clings with its feet to the face of the sand bank at a suitable spot and with its bill works away at the sand until gradually a round hole is started. When the hole gets sufficiently deep the feet are used to some extent in removing accumulated dirt from the hole. As the hole gets deeper the sand is, in part at least, carried out in the mouth, but in the majority of burrows there is always evidence that at least part of the sand is clawed or scratched out.

These burrows go into the face of the bank, slightly rising in most cases until from two to eight feet back, when with a slight descent and enlarging of the hole the circular nesting chamber is formed. Where the birds are not disturbed, two feet is about the average depth of a burrow, while when much bothered by boys they go in far deeper. A burrow I measured extended backward three feet. The entrance hole was three inches in diameter, the diameter of the chamber was five inches and the depth of the hollowed out chamber below the level of the entrance was one-half inch. The nest was composed of a little dry grass and lined with white feathers. It was found at Veazie, June 16, 1900, and contained five pure white eggs measuring 0.68×0.50 , 0.68×0.49 , 0.69×0.51 , 0.69×0.50 , 0.67×0.48 .

Three to seven, generally four or five eggs are laid about the middle of June. The difficulty in the way of determining how long it takes to build a nest is of course considerable. Observation has shown me that it took about fifteen days from the time a burrow was commenced until the birds began to carry in straw and grass, indicating the burrows had been dug, but in cases where unusually deep burrows are made the time of course is far greater. Usually the birds continue carrying grass and feathers for a period of about five days, and a week after these operations have ceased a complete or nearly complete set of fresh eggs can be found by digging. The young birds are ready to leave about a month after the nest building has ceased.

That both sexes do their part of the work is very evident. Often on going up to a burrow which I knew contained eggs, both birds would leave on my starting in operations, and on getting one of the eggs out it would be found well incubated. I have also seen both birds in a burrow which was being dug, and they roost together in it at night.

The food consists of flies, mosquitoes, winged ants, beetles, small butterflies, moths and in general any winged insects.

The spring flight of caddis flies and May flies is an addition to their diet as well as to that of the other species of Swallows. In fall or late summer they gather on the wires by the roadside with others of their tribe. Though they utter a few twitters and are noisy enough when danger threatens their homes, they are usually rather silent as compared with other species of Swallow.

Family AMPELIDÆ. Waxwings, etc.

Subfamily AMPELINÆ. Waxwings.

Genus AMPELIS Linnæus.

Key to the species of AMPELIS.

- A. Primary wing coverts and outer web of secondaries white tipped; wing over 4.25. Bohemian Waxwing.
- B. Primary coverts and outer web of secondaries not white tipped; wing under 4.00. Cedar Waxwing.

618. *Ampeelis garrulus* Linn. Bohemian Waxwing; Northern Waxwing; Northern Chatterer.

Plumage of adults: primary coverts and outer webs of secondaries white tipped; secondaries with small red sealing-wax-like tips; line through the eye, forehead and chin black; rich grayish brown above and more grayish on wings, tail coverts and tail; tail feathers tipped with yellow, forming a yellow band; front of crown and under tail coverts chestnut rufous; outer webs of primaries tipped yellow or white; breast grayish brown, grayer on belly; very prominent crest on head. Immature plumage: red waxy tips to the secondaries fewer and smaller; crest smaller; in general with less grayish; very similar to adults. Wing 4.50; tail 2.80.

Geog. Dist.—Northern portions of the Northern Hemisphere; in North America breeding far northward; in winter south very irregularly to the United States, Pennsylvania, Illinois, Kansas, southern Colorado, and northern California; accidental at Fort Mohave, Arizona.

County Records.—Kennebec; given in Hamlin's List, (R. S. Me. Bd. Agr. 1865, pp. 168-173). Penobscot; occasional specimens have been taken in winter, two or three at the outside, but none have been reported for years, (Knight). Washington; rare, some winters occurs in large flocks, (Boardman).

It has been years since there has been any definite report of the occurrence of this species in Maine. It occurs in midwinter

when found at all. In general habits, actions and appearance it resembles the common Cedar Bird, and in fact several Cedar Birds have been taken in winter, supposing that they were the rarer species. Nests and eggs are said to be very similar indeed to those of the common species, the nests being rather compactly built of twigs, roots and moss and placed in evergreen and other trees. A set taken in Labrador, June 18, 1885, is described by Davie as being bluish white, spotted with lilac and dark brown. He states they measure 0.99×0.70 , 0.98×0.70 , 1.05×0.69 , 1.06×0.70 . The food eaten is said to be fruits, buds, berries and insects.

619. *Ampelis cedrorum* (Vieill.). Cedar Waxwing; Cedar Bird; Cherry Bird; Carolina Waxwing; Southern Waxwing; Canada Robin; Carolina Chatterer; Apple Bird.

Plumage of adults: line through the eye, the forehead and chin black; silky drab or grayish brown above; rump ashy; wings and tail slaty gray on visible portion of feathers; secondaries and tail often tipped with red, sealing-wax-like appendages; yellow band at end of tail; breast silky drab; belly yellowish; under tail coverts white; crest prominent. Immature plumage: very similar but crest not very prominent; more olive brown above; paler below, streaked on throat, breast, sides and flanks with brownish or dull grayish stripes. Wing 3.75; tail 2.45.

Geog. Dist.—North America, breeding from Virginia and the mountains of South Carolina north to the Fur Countries; wintering from the northern tier of states south to Costa Rica and the West Indies.

County Records.—Androscoggin; common summer resident, rare in winter, (Johnson). Aroostook; common summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, rare and sporadic in winter, (Knight). Kennebec; common, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; common breeder, (Nash). Penobscot; common summer resident, rare, irregular and roving in winter, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; common summer resident, some in winter, (Boardman). York; common summer resident, (Adams).

Though likely to occur irregularly and sporadically almost anywhere in the State in roving flocks during the winter, the species is by no means a regular winter bird, but is more

properly a summer resident. Near Bangor they usually arrive about May twenty-third to twenty-eighth and remain until August thirtieth.

They usually occur in small bands of ten to a dozen, feeding on their arrival on the insects which visit the apple, cherry and pear trees to quite an extent. I have often seen the individuals of a flock engaged in pecking at the apple and other fruit tree blossoms in seemingly an aimless way, showers of the ripe petals falling before their onslaught. An examination of individuals taken at such times shows numerous insects of the sorts that visit these blossoms have been eaten, and while occasional petals are found in their digestive tract, it is very evident that the insects are the real object of their work. Large numbers of the smaller hymenopterous insects are thus eaten, also dipterous insects, beetles, curculios, small moths and similar insects.

This habit of the Cherry Bird may therefore be cited as very beneficial. A very little later they eat hundreds of canker worms, tent caterpillars, and other injurious larvae found on the foliage of the orchard trees. If a stray moth or butterfly passes they very frequently give chase and take it on the wing, in fact it is a regular habit of the species to take its prey "Fly-catcher-like." In later summer the cherry crop is attended to by them, and though quite a havoc is made with the cultivated crop in some localities, the various wild cherries seem to be more relished, and the fruit of the shad-bush comes in for their attention. Rarely, cultivated strawberries, raspberries, blackberries and similar small fruits and berries are eaten but they prefer the wild varieties if accessible.

All through the year insects form a large part of their diet, and the good they do in destroying such things as the canker worm, tent worm and similar pests pays many times over for the little cultivated fruit they eat. This is one of the very few birds that I have known to eat the Colorado potato beetle and its larvae and even feeding the young on the fat red slugs. I

have seen them visit potato vines repeatedly and feed on the slugs or carry them to their nests.

In habits the Waxwings are interesting. What is more pleasing than to see a flock of these gentle creatures flying through the air, uttering their characteristic lispings call, then suddenly they drop to the limbs of an apple or other tree. Here they clamber about, now erecting their crests, full of life and vivacity, now with lowered crest delving into an apple blossom. Their crests are a very sensitive index to their feelings, seemingly erected in various ways to manifest surprise, anger, and other emotions. Now they clamber parrot-like through the branches, hang head downward to peer into a blossom or under a leaf, or leap into the air after a passing moth.

From the middle of June up to early July nesting begins, sometimes earlier, but as a rule the majority of nests contain fresh eggs near Bangor about June twenty-ninth. The nesting site is quite varied, always in the limbs of some tree, very often in orchard trees or hedges at heights of eight to twenty feet, again in maples and elms of the city streets thirty to forty feet from the ground, or very often in the cedars, spruces, pines, firs or other evergreens of open pastures and rocky hills. Often they nest in the trees along streams and rivers. Again in the heart of the open spruce and hackmatack bogs of northern Maine I have found them nesting, so it will be seen that their choice of surroundings for their home is rather varied, but they do not seem to like the dense, thick forest growth. On the University of Maine Campus several pair nest in the evergreen trees, placing the nests on horizontal limbs at heights of five to fifteen feet.

The nests are quite variable in construction, often made of dry grass alone, again of fine shredded bark of cedar and hemlock, roots, twigs, paper, waste, rags and twine, lined with hair, wool and feathers. The handsomest nests they build, in my estimation, are the ones found in the open bogs, placed in

the spruce and hackmatack trees. These nests are built with a foundation of small twigs, the rest of their structure being the soft *Usnea* lichen, erroneously called *Usnea* moss, and a peculiar soft, black, thread-like lichen resembling the gray *Usnea*. Such nests are large, substantial and very handsome. One at hand measures five inches in diameter outside by two and a half inside, while its exterior height is two and a half and the depth inside one and a half inches.

The eggs are three to six, generally four or five. They are light slate or pale bluish gray, spotted and blotched with black, umber, brown and purple. The spots are rather scattered over the surface, but generally fewest on the smaller end. Five eggs taken at Orono, June 29, 1896, measure 0.87×0.62 , 0.88×0.64 , 0.89×0.65 , 0.87×0.64 , 0.85×0.61 . Both birds aid in building the nest, the construction of which requires from a week to twelve days. An egg is laid each day until the set is complete, and both birds help in the work of incubation. The male is generally not far away when not incubating, often perched on the top of a near by tree. He does his share also in feeding the young. Incubation takes about fourteen days and the young remain in the nest about sixteen days.

Family LANIIDÆ. Shrikes.

Key to the species of LANIIDÆ.

- A. Wing over 4.30; nasal tufts always whitish or grayish on top; lores grayish black; under parts generally *strongly* barred with wavy vermicular lines. Northern Shrike.
- B. Wing under 4.25; lores and nasal tufts wholly black; breast unbarred or faintly barred with wavy vermicular lines. Migrant Shrike.

Genus LANIUS Linnæus.

621. *Lanius borealis* Vieill. Northern Shrike.

Plumage of adults: wings and tail black, the primaries white at base and secondaries tipped with grayish or whitish; the tail feathers, especially the outer ones, more or less white tipped; forehead whitish; lores grayish; nasal

tufts grayish; other upper parts grayish; under parts white, barred with wavy vermicular lines of black. Immature plumage: similar in general to adults but scapulars, rump and upper tail coverts with dusky undulations; the secondaries, greater wing coverts and middle tail feathers rusty tipped; under parts barred with wavy undulations of grayish brown. Wing 4.50; tail 4.20; tarsus 1.02. Bill strong and hooked, the upper mandible curved downward.

Geog. Dist.—Northern North America, breeding in the far north, always(?) north of the United States; in winter migrating south to the northern tier of states and to Virginia, Kentucky, Kansas, Colorado, Arizona and northern California.

County Records.—Androscoggin; fairly common winter resident, (Johnson). Aroostook; winter resident, (Knight). Cumberland; common winter migrant, (Mead). Franklin; rare winter resident, (Swain). Hancock; winter resident, not common, (Knight). Kennebec; rare, (Gardiner Branch). Knox; winter, (Rackliff). Oxford; fairly common migrant, (Johnson). Penobscot; quite common in late fall, winter and early spring, (Knight). Piscataquis; (Homer). Sagadahoc; common in winter, (Spinney). Somerset; not common winter visitor, (Morrell). Waldo; seen in winter, (Newell). Washington; common fall and winter, (Boardman). York; rare migrant, (Adams).

Like the bold Norse robber barons of old, these birds come down from their northern wilds to prey on southern wealth. The earliest I have seen one of these birds is October fifteenth and the latest April tenth, but they usually appear slightly later and leave earlier than these dates. As winter residents they occur generally throughout the State, never really common, but still regular and frequently seen along the highways and in the trees of the city streets and gardens.

They come into the city of Bangor every winter and make it their special business to attend to the English Sparrows. It is a very common sight to see one of these large grayish birds hopping downward from limb to limb of a tree, until finally it pounces on an "Englischer" which has been noisily squawking on the ground, or in a tree, or on the roof of some building. Grasping the Sparrow in its claws, it flies heavily away, while violent prolonged squealings of the victim draw the attention of the bystanders to the tragedy. Generally the local newspapers print the excited and garbled story of some bystander who knows it all and the innocent Pine Grosbeaks are in most

cases accused of having perpetrated the crime. Indeed, I have had otherwise well informed people stoutly argue that they had seen a Pine Grosbeak kill and carry off a Sparrow and refuse to admit they were mistaken, though of course it was a Shrike that did the mischief. This is one reason why scientists are so skeptical regarding the excited and garbled reports of unusual occurrences which are so often submitted by beginners and laymen.

If the Shrikes confined their attentions to the English Sparrows there would not be much cause to complain of their conduct, but they also take Redpolls, Pine Grosbeaks, Siskins and in general almost any of our small winter birds. The large, stout bill speedily kills the victim by a few blows and it is torn to pieces and devoured. Mice and other small mammals are taken as well. The only call I have heard them utter is a harsh, shrieking "jo-ree," but E. S. Thompson has recorded the fact that perched on the top of a tree they often sing a song that would do credit to a Catbird. Very rarely indeed I have heard our Migrant Shrike sing thus and have no doubt its near relative may do likewise.

The nest is described as a bulky structure of twigs, grass and stems, lined with feathers, and is said to be placed in thorny trees, bushes and evergreens. The eggs are said to resemble those of the Migrant Shrike but are somewhat larger. They are four to six in number, dull whitish or greenish gray, marked with obscure purple, olive, light brown and grayish, and are said to measure 1.08 x .79 on the average.

622e. *Lanius ludovicianus migrans* W. Palmer. Migrant Shrike; Butcher Bird; Joree; Grasshopper Hawk; Cricket Hawk; Mouse Hawk.

Plumage of adults: wings and tail black, the secondaries white tipped and primaries white at base; many of the tail feathers white tipped; lores and nasal tufts black; narrow black line on forehead; below white, occasionally with *faint* dusky vermiculations. Immature plumage: drab gray above, with faint vermicular bars and pale buff edgings to feathers; below whitish, washed with pale buff or drab on breast and sides and with faint vermicular

subterminal bands to the feathers. Bill strongly hooked, hawk-like. Wing 3.80; tail 3.85.

 Geog. Dist.—Eastern Canada and eastern United States, west to Minnesota, south to the Carolinas, Tennessee and lower Mississippi Valley; breeding in the northern portions of above range and migrating southward in winter.

County Records.—Androscoggin; rare summer resident, (Johnson). Aroostook; occasional at least in southern sections, (Knight). Cumberland; of regular occurrence, it has come to my notice only during April and August, in Westbrook, Gorham, etc., (Norton); since Mr. Norton recorded the species thus I found and took him to a nest containing newly hatched young near Westbrook, (Knight). Franklin; rare summer resident, (Richards); common summer resident, (Sweet). Hancock; summer resident, (Murch). Kennebec; rare, (Gardiner Branch). Oxford; rare summer resident, (Johnson). Penobscot; common summer resident, in 1908 seen March 1st, (Knight). Piscataquis; common summer resident, (Whitman). Somerset; quite common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; rare summer resident, (Boardman). York; rare migrant, (Adams).

The species exceptionally arrives as early as March first, more usually late in the month and remains until late September, exceptionally later as Mr. Norton records one at Westbrook on November seventeenth, (J. M. O. S. 1901, p. 27). That the species is extending its range throughout Maine and becoming more common seems evident. Some thirty years ago the eggs were discovered near Bangor and disposed of by a taxidermist as eggs of the Great Northern Shrike, a mistake which was later discovered. It seems very probable that the species has only been found in the State for not over forty years, as it is well known to have been increasing since first found here and to have extended its range. It is largely a bird of civilization, frequenting the hedgerows, wayside trees, telegraph wires and peaks of houses, and I have never seen them at any distance from cultivated lands.

Perched on the most prominent places they watch for their prey. Grasshoppers, crickets, frogs, moths, butterflies, mice, shrews and similar things are captured and eaten by them, while more seldom indeed they eat small birds. Being smaller and weaker than the Great Northern Shrike, they are not so well fitted to capture other small birds and indeed do not seem

so inclined as a rule. They impale their prey on sharp thorns, twigs, nails of fences and similar projecting objects and the same is done by their larger relative. Many times they never return to eat the prey thus impaled, but sometimes they do and seem to relish it as a rule when high flavored. Mice with the brains eaten out I have quite often found impaled by this species.

They utter several cries and calls. The usual note is a harsh "joree" and they also utter a harsh "y-e-a-a-a" of anger and viciously snap their bills as they hop about in the vicinity of their nest when it is being despoiled. Rarely indeed I have heard the male utter a song much like that of the Catbird or Brown Thrasher, but harsher and lower.

The nest is placed on a horizontal limb in some roadside tree or a tree or shrub along a hedgerow, less often in an apple or other orchard tree. When a Shrike is seen perched on some tree in late April or early May the nest can generally be found not far away by careful searching. Always rather tame, both birds are more so than usual when a nest is visited, coming into the limbs two or three feet away from the intruder and protesting vigorously. The nests are large and bulky, composed of rootlets, twigs, twine, rags, feathers and grasses, lined warmly with feathers and wool. One taken from a balsam fir tree near Bangor, May 8, 1896, was placed in the three forks of a limb sixteen feet from the ground. The nest is four inches deep outside by two inside, and the diameter outside is seven and inside three inches. It is warmly lined with hair, wool and willow cotton. The eggs measure 0.96×0.70 , 0.96×0.70 , 0.96×0.70 , 0.95×0.70 , 0.95×0.70 , 0.94×0.69 .

The eggs are quite variable, though of the same general style. The ground color of some is white, others grayish or greenish gray. Some are washed with obscure purplish, light brown or olive markings all over, others in addition to this washing are rather boldly wreathed with stronger blotches of the same color about the larger ends, while again others, gen-

erally those with a white ground color, are heavily spotted only at the larger end, but this type is rare. I have also seen eggs wreathed only about the smaller end, these being of course freaks.

A pair of birds occupies the same locality year after year, that is to say I have found nests in the same trees or group of trees, and many times on the very same limb from which a nest or nests had been taken in years previously. The eggs also were of the same type so that it was evidently the same birds. For some years I watched several pair of these birds from season to season and could invariably count on their return to the same localities, the type of eggs found in each locality being similar from year to year, and every thing in fact tending to show I was watching the same birds. In one case the male bird was killed and the survivor soon found a mate and had another nest in the same locality within a month. The next season the female was killed, the male shortly found a new mate in the same way and another nest was built, and the eggs laid therein were of a different type. Of late years lack of time has prevented my following up the Shrikes, but I have knowledge of one pair being in the same locality for ten years, and of several other pair for only a year or so less than this.

The male bird helps in all the home duties. Nest building ordinarily requires a week, sometimes ten days. Four to eight, generally five or six eggs are laid in late April or early May, an egg each day until the clutch is complete. Incubation requires from thirteen to sixteen days according to circumstances and the eggs are all hatched within three days at the outside from the time when the first one hatches. Incubation generally begins with the first egg laid, sometimes not until the set is half completed. The young are in the nest eighteen to twenty-two days, and on leaving are accompanied by the parents for a season. In late June another brood is usually reared, the male taking charge of the first brood while the female incubates.

Family VIREONIDÆ. Vireos.

Key to the species of VIREONIDÆ.

- A. No bars on wing.
 - 1. Entire under parts pale greenish yellow. Philadelphia Vireo.
 - 2. Under parts white.
 - §. Crown slaty gray, bordered at sides by blackish. Red-eyed Vireo.
 - §§. Crown ashy olive green and not bordered at sides by blackish. Warbling Vireo.
- B. Wings distinctly barred.
 - 1. Line from eye to bill and eye ring white; head bluish gray. Blue-headed Vireo.
 - 2. Line from eye to bill and eye ring not white.
 - §. Under parts and throat yellow. Yellow-throated Vireo.
 - §§. Under parts white or whitish. White-eyed Vireo. (Hypothetical List).

Genus VIREO Vieillot.

Subgenus VIREOSYLVA. Bonaparte.

624. *Virco olivaceus* (Linn.). Red-eyed Vireo; Red-eyed Greenlet; Preacher; Politician.

Plumage of adults: crown slaty gray, bordered at sides by blackish; white line over eye; above olive green; below white; eyes red. Immature plumage: very similar to adults, the eyes however are brown instead of red. Wing 3.20; tail 2.25; culmen 0.52.

Geog. Dist.—Eastern North America west to British Columbia; breeding from the Gulf States to Labrador, Manitoba and even Arctic regions; wintering from Florida to Central and South America.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; common summer resident, (Knight); common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 111). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; common summer resident, (Adams).

Occasionally arriving as early as May tenth, the species more often arrives in numbers about the nineteenth and from

then to mid September it is common and generally distributed through the State, and occasionally it is found up to October first. These birds may be found almost anywhere in the trees of the city streets, gardens, orchards, along rivers, ponds, lakes, in pastures, thickets, wooded waysides, in fact almost anywhere there are a few trees to afford shelter and they seem to prefer deciduous or mixed growth, not being so numerous in exclusively evergreen woods.

The characteristic, broken, warbling, arguing, "preaching" of the male bird may be heard from morning to night in spring and summer, much as if it were saying "cheery," a pause, "don't you see," another pause, "don't you know," pause, "its so," pause, "we see," pause, "so do ye," pause, "let it be," and with the help of imagination we can seem to hear these words quite readily as we listen to the leisurely warbling of the male, and I have known them to sing thus all day long. The pauses in the song are made as he hops from branch to branch, peering under this, that or the other leaf, taking a beetle or caterpillar here, another there, and uttering a few notes between mouthfuls. A harsh scolding "wheree" of alarm or anger is often uttered and also a "chip."

The nest is pensile, built in and below the fork of a limb at heights of four to fifty feet from the ground. The forks of elms, maples, birch, apple and many other hard wood trees and shrubs are utilized and less often nests are built in hemlock and pine forks, but deciduous trees seem to be preferred. The male does not seem to help in building the nest, being too much occupied in singing, but he accompanies the female and is generally around while she is getting nesting material and building. He does however help in the work of incubation and quite often sings while on the nest. In fact I have several times located nests by trying to see the bird while singing and found him on the nest.

A typical nest was found just begun in the fork of an apple tree in an orchard, four feet from the ground. The nest was

completed in seven days and the first egg laid, and an egg daily until the set of three was complete. The nest was composed of hornet's nest paper, bits of birch bark, and small lichen fragments, held together with spider webs, and lined with fine grass culms. It measured two and a half inches deep outside by one and a half inside, the external diameter was three and the diameter inside two inches. The three eggs measured 0.89×0.63 , 0.86×0.63 , 0.85×0.60 and were white with a few black, reddish brown and umber specks about the larger ends. This nest contained eggs on June 29, 1894. The nesting season is rather late, the eggs, three or four in number, being laid from the middle of June to early July. Incubation requires twelve to fourteen days.

The food consists largely of insects which are gleaned from the foliage and limbs of the trees as the birds hop through the branches or climb about the ends of the limbs. Occasionally I have seen them spring into the air after some passing insect. Various beetles, green caterpillars, spiders, hymenopterous insects, moths, lice, eggs of insects and similar things are eaten. Occasionally a few wild cherries and shad bush fruit are eaten but the diet is in summer largely insects.

626. *Vireo philadelphicus* (Cass.). Philadelphia Vireo;
Brotherly Love Greenlet.

Plumage: wings and tail clove brown, edged with olive green; upper parts olive green; whitish line over eye; first primary about as long as second one; *pale greenish yellow below*. Wing 2.65; culmen 0.38; tail 2.00.

Geog. Dist. — Eastern North America, breeding from Maine, New Hampshire and Manitoba northward; wintering in Central America.

County Records. — Aroostook; a pair at Fort Kent in summer, evidently breeding, (Knight). Franklin; rare migrant, (Richards); a pair seen at Phillips, May 21, 1906, (Sweet, J. M. O. S. 1906, p. 106). Hancock; a pair of these birds nested near Bucksport in June, 1900, (Mrs. W. H. Gardner). Kennebec; occurs at Waterville, (Deane, B. N. O. C. 1, p. 74). Oxford; found breeding about Lake Umbagog in western Maine, (Brewster, Auk 1903, p. 369 et seq.) Penobscot; migrant at least, (Knight). Somerset; evidently breeding at Rowe Pond in July, 1906, (Knight). Waldo; a young female

obtained at Job's Island, September 13, 1883, (Howe, J. M. O. S. 1900, p. 31). Washington; rare, (Boardman).

Migration dates for this species are rare, the earliest at hand is Mr. Sweet's for May twenty-first at Phillips, while the latest is September thirteenth, Howe; but it is very probable that the species arrives slightly earlier and tarries considerably later with us. It is at present to be called very rare and locally distributed, but future search will doubtless show that it breeds regularly and perhaps even commonly about the ponds and lakes of northern and eastern Maine. The birds I saw at Rowe Pond and at Fort Kent were doubtless breeding and in all probability at the time seen in these places, early July, had young in the vicinity. The birds attracted my attention in each case by singing, and though the song was almost exactly like that of the Red-eyed Vireo there seemed to be something indescribable in it that drew attention, perhaps it was a difference only of my imagination, but there often comes to all of us a peculiar subtle telepathic feeling that there is something odd, rare or interesting in the vicinity which should be looked up. I could not see that they acted different in any way from the Red-eyed Vireos, feeding and singing alternately in the same leisurely manner. The distinctive yellow under parts were sufficient to prove the identity once the birds were seen.

The best description we have of the nesting habits, including description of nest and eggs is given by Mr. Brewster in *The Auk*, 1903, p. 369 et seq. He found a nest at Lake Umbagog, Maine, on June 14. The male bird was on the nest and singing at the time, and in searching to locate the songster the nest was discovered with the bird singing on it. The nest was in a poplar tree (*Populus tremuloides*) fully thirty feet from the ground near a road which ran through second growth poplars and birches. The nest is described as hung, usual Vireo fashion, in a fork between two diverging horizontal twigs and firmly bound to both. The nest measured three inches in length, two and three-quarters in width and two and sixty-five hundredths

in depth externally; internally it was two in length, one and a half in width, and one and thirty-five hundredths inches in depth. The walls were more than half an inch thick in some places and the bottom almost a full inch thick. It was composed of shreds of grayish brown and light brown bark, interwoven and decorated exteriorly with strips of paper birch and willow catkins, held in place by shreds of *Usnea*. The eggs were pure white sparsely spotted with burnt umber, chocolate and black, the markings small and rounded. On two of the eggs the markings are generally distributed save at the small end, while on the other they are confined to the large end. The eggs measured 0.80×0.54 , 0.81×0.53 , 0.79×0.54 . A nest taken by Mr. Thompson (Mr. Seton, as he is now known) in Manitoba was only eight feet from the ground in a small willow, but it seems very likely that most nests of this species are situated well up in trees. Only two really authentic nests, Mr. Brewster's and Mr. Thompson's, seem to be known.

627. *Vireo gilvus* (Vieill.). Warbling Vireo.

Plumage: wings and tail clove brown, edged with olive green; upper parts grayish olive green; a white superciliary line; first primary less than one inch in length; below white, slightly washed with yellowish on sides and flanks. Wing 2.84; tail 2.20; tarsus 0.69.

Geog. Dist.—North America, breeding from Oaxaca, Mexico, to Hudson Bay; wintering in South America.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; seen at Houlton, Fort Fairfield and Caribou, (Knight). Cumberland; rare, (Mead). Franklin; rare summer resident, (Swain); common summer resident, (Sweet). Hancock; summer resident, (Dorr). Kennebec; common summer resident, (Gardiner Branch). Knox; heard at Camden, July 2, 1900, (Howe, J. M. O. S. 1900, p. 31). Oxford; occurs at Norway, (Purdie, B. N. O. C. 2, p. 15). Penobscot; local summer resident, not rare of late in Bangor, (Knight). Piscataquis; common summer resident near Dover, (Ritchie). Somerset; not common summer resident, (Morrill). Waldo; summer resident, (Knight). Washington; not plenty, summer resident, (Boardman).

The Warbling Vireo appears rather rare or local in Maine as a whole, though common to fairly common in a few localities.

It is preeminently a species of the rows of trees along city streets and country highways, and less often in the fringe of trees along rivers away from civilization. In general they arrive from the south about May twentieth, occasionally as early as May tenth, according to Mr. Brown, and depart in late August or early September, latest September fifteenth, which is exceptional.

The song is characteristic, vivacious and a rich, continuous warble with an undertone prevailing throughout as if the singer were trying to give the song with variations, and is distinctly different from any of the other Vireo songs I have heard, different from the song of the Purple Finch but to be compared to it rather than to the songs of other Vireos. It is uttered from the tops of the taller trees and the birds are heard oftener than seen.

A typical nest in my collection measures two and four-fifths inches in height externally by one and three-fifths internally while its diameter is three outside by two inside. It was suspended from a forked limb, Vireo style, sixty feet from the ground. The eggs are white, rather sparsely speckled with black, brown and umber, chiefly about the larger end. They measure 0.78 x 0.55, 0.73 x 0.53, 0.76 x 0.54. Three or four are usually laid from the second week in June to the last of the month with us. The nests are situated from twenty to seventy feet from the ground, on an average of above thirty feet. They are built of bits of shreddy bark, soft silken vegetable fibers, held together by cobwebs and lined with dry grass or hair.

The food consists of the general run of insects found in the trees inhabited by the birds and consequently they are very beneficial. The male bird does his share of the incubating and frequently sings while on the nest.

Subgenus LANIVIREO Baird.

628. *Vireo flavifrons* Vieill. Yellow-throated Vireo.

Plumage of adults: median and greater wing coverts white, forming two broad wing bands; lesser coverts edged olive green; scapulars and rump olive gray; otherwise above bright olive green, also same on sides of neck; eye ring, throat and breast bright yellow; belly white; wings and tail blackish, edged with paler. Immature plumage: smoke gray above with less greenish tinge; chin, throat, sides of head, eye ring, and superciliary stripe pale yellow; rest of under portions white. Wing 3.10; tail 2.15.

Geog. Dist.—Eastern United States, breeding from Florida and the Gulf States north to Newfoundland, Ontario and Manitoba; wintering in Central or South America.

County Records.—Androscoggin; rare summer resident, (Johnson). Cumberland; rare, two specimens taken in May and on July 31, 1878, (Mead); one observed at North Bridgton, June 18, 1897, (N. M. M., Me. Sp. 1897, Aug. p. 8); I know of but one specimen, which was taken May 21, 1881, (Brown, C. B. P. p. 10); May 12, 1902, secured a male at Westbrook, May 17 Mrs. Norton saw another, Sept. 9, 1903, one found dead near a building in Westbrook and brought to me, May 22, 1904, one seen by Mrs. Norton and me, and almost daily until July 1, (Norton, J. M. O. S., 1905, p. 46-47). Franklin; rare summer resident, (Swain). Hancock; have noted one pair annually for the past five years in the same neighborhood, (Mrs. W. H. Gardner). Kennebec; (Robbins). Penobscot; only two instances of its occurrence, (Knight). Piscataquis; one seen by me near Dover, (Ritchie). Sagadahoc; rare, (Spratt). Waldo; one July 10, 1899, at Islesboro, (Howe, J. M. O. S., 1900, p. 31). Washington; a few spring and fall migration, (Clark).

This species is our rarest Vireo, being really a bird of more southern regions. The migration dates are not as definite as might be desired, the earliest date, May twenty-first, being not as early as the species might be expected, while the fall records do not seem to extend beyond August twentieth, though the species might be reasonably expected later than this. It is rare and exceedingly local in Maine, and primarily a species of oak, maple and beech woods, less often frequenting the orchards and trees of city streets, though more apt to be seen and reported under these latter conditions. The food consists of various species of insects gleaned from the foliage of the trees which are searched by this species in much the same way that the other Vireos feed. The song I have never

heard but those who have say that it is similar to that of the Red-eyed Vireo but uttered more slowly, deeper and in a richer tone and frequently interrupted by harsh scolding notes.

In Maine the nesting date would seem to be about the second week in June. A set of eggs in my possession from Connecticut was taken near Wethersfield June 4, 1892. The data states the nest was in the fork of a maple limb, pendant in usual fashion, about fifteen feet from the ground by the side of the main street of the village. This nest is three inches deep externally by one and three quarters internally, the diameter outside two and three-quarters and inside one and a half inches. It is composed of willow cotton, soft plant down and fiber, covered with hornet's nest paper and lichens externally, held together with numerous spider webs, and lined with hair and fine grass. The eggs measure 0.85 x 0.61, 0.86 x 0.58, 0.82 x 0.56, 0.86 x 0.56, and are white in color, sparsely spotted with small rounded spots of brown, umber and black, chiefly about the larger end. Three or four eggs are the usual number laid.

629. *Vireo solitarius* (Wils.). Blue-headed Vireo; Solitary Vireo.

Plumage of adults: lores and eye ring white; greater and median wing coverts white tipped, thus forming two very prominent white bars on the wing; top and sides of head bluish or slate gray; wings and tail brownish, edged with olive green; back olive green; sides washed with primrose yellow; otherwise white below. Immature plumage: upper parts drab, tinged with greenish; top and sides of head drab gray; otherwise very similar to adults. Wing 2.97; tail 2.18.

Geog. Dist.—Eastern North America, west to the Plains, breeding from Connecticut, and farther south in the higher Alleghany Mountains, northward to New Brunswick, Manitoba, Hudson Bay and Fort Simpson; wintering from Florida to Guatemala.

County Records.—Androscoggin; rare summer resident, (Johnson). Aroostook; common at Houlton, not common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 111); rare in the Woolastook Valley, (Knight). Cumberland; common migrant, (Mead); rather rare summer resident, (Brown, C. B. P. p. 10). Franklin; rare summer resident, (Swain); common summer resident, (Sweet). Hancock; rather common spring and fall migrant, a few

breed, (Mrs. W. H. Gardner). Kennebec; very rare, (Gardiner Branch). Knox; summer resident, (Norton). Oxford; occurs at Upton, (Brewster, B. N. O. C. 3, p. 116). Penobscot; rare summer resident in southern portion, locally common in northern region, (Knight). Piscataquis; rare, (Homer). Sagadahoc; (Spratt). Somerset; not common migrant, (Morrell); quite common summer resident of northern sections, (Knight). Waldo; summer resident, rare, (Knight). Washington; not common summer resident, (Boardman).

This species occurs locally throughout the State in migration, arriving about April twenty-fourth to the first of May and departing about October tenth, though given by Mr. Brown as occasional until the middle of November. It is practically a summer resident in every county of the State, though very rare in the southern sections as such, and extremely local even in the regions where when found it may be called even quite common. The species is the earliest to arrive of our Vireos and nests earlier, often having eggs at about the date the other species are arriving.

The nests are pendant from the forked limbs of trees, usually hemlock, spruce, fir and hackmatack being the trees preferred to build in, though rarely hard wood trees are selected. Such nests as I have seen were placed more frequently in hemlock and fir trees in the forks of the lower spreading branches at four to not over ten feet from the ground. Birch, cedar and hemlock bark in fine strips were used to build the nest proper which was covered exteriorly with moss, birch bark, hornet's paper and lichens, held on by spiders' silk, and lined internally with pine needles and grass culms.

Such nests as I have found about the middle of June contained young, so it is evident that the full complement of eggs must have been laid by the very last of May, and as three to four is the number of young, the usual number of eggs must be the same. The nests seemed very similar in size to those of the Red-eyed Vireo, but there is a characteristic appearance, perhaps owing to the material used and the sites selected, which

tends to indicate the nests of this species, even when found after they have been deserted. Eggs do not differ from those of the other Vireos to any extent, being white with sparse spots of black, umber and brown scattered about the larger ends.

The song of the males is a continuous warble, uttered more or less constantly in the evergreen woods which they prefer, and is similar but yet quite different from that of the Red-eye. As I have seen and heard a male singing while on a nest containing recently hatched young, it appears evident that he is inclined to take his part in family affairs. Other collectors have told me that the male also frequently sang while incubating the eggs and that they had located nests by tracing up the source of the song. The birds also utter a trilling whistle and a harsh scolding cry.

The food is insects of various sorts, beetles, spiders, flies, and in general such insects as may be gleaned from the foliage of the trees they frequent. I have also on several occasions seen one of these birds spring into the air after passing insects after the style of a Flycatcher, in fact this manner of feeding would seem to be more characteristic of this species than of any other Vireos with which I am acquainted. Though frequenting the less inhabited and wilder sections of the State the birds are very tame when approached by man and will submit to being watched from a distance of only a few feet without alarm.

Family MNIOTILTIDÆ. Wood Warblers.

Key to the species of MNIOTILTIDÆ.

A. Plumage *neither streaked or spotted below.*

1. Throat, breast and belly white, whitish or pale buffy white.

§. Tail *not* blotched or spotted with yellow or white.

? White spot on wing at base of primaries; under tail coverts whitish. Black-throated Blue Warbler, (female and immature).

?? No white spot on wing at base of primaries.

a'. A buffy line through center of crown, and from bill over eye, bordered by black. Worm-eating Warbler. (Hypothetical List).

- a². No line of buffy bordered by black present through crown or over eye.
- b¹. Outer tail feathers shortest; legs lightish or flesh color. Northern Yellow Throat, (female and immature).
- b². Outer tail feathers equal in length to others; legs blackish. Orange-crowned Warbler. (Hypothetical List).
- §§. Tail blotched or spotted with yellow or white.
- ? Wings with white or grayish white bars.
 - a¹. Under parts buffy tinged; back olive green and usually streaked with black. Bay-breasted Warbler, (immature).
 - a². Under parts not buffy tinged, either white or whitish.
 - b¹. Back streaked with black and white only. Black and White Warbler, (female).
 - b². Back not streaked with black and white.
 - c¹. Back grayish green; grayish wing bars; white ring around eye. Pine Warbler, (female and immature).
 - c². Back greenish yellow; cheeks gray; Chestnut-sided Warbler, (immature).
- ?? No white or grayish white wing bars present.
 - a¹. Back and head brownish: yellow band on wings at base of primaries, and yellow at base of tail. American Redstart, (female and immature).
 - a². Back and head greenish or yellow.
 - b¹. Head grayish, contrasted to bright green back; small dark spot before the eye. Tennessee Warbler, (male).
 - b². Head not grayish, but either greenish yellow or yellowish green.
 - c¹. Under parts pure white. Chestnut-sided Warbler, (immature).
 - c². Under parts yellowish, inner margin of feathers of tail yellow. Yellow Warbler, (immature).
- 2. Throat, breast and belly *not* white, whitish or buffy white.
- §. Throat yellowish, yellow or orange colored.
- ? White bars on wing.
 - a¹. Throat yellow, belly whitish, different in color.
 - b¹. Back bluish with yellow central blotch or patch. Northern Parula Warbler.
 - b². Back olive green. Pine Warbler.
 - a². Throat and belly same color.
 - b¹. Whole of under parts *strongly* yellow. Magnolia Warbler, (immature).
 - b². Under parts at most buffy or yellowish.
 - c¹. Back not streaked with black. Pine Warbler, (female).
 - c². Back streaked with black at least slightly.

- d¹. Pale yellowish white on under parts. Black-poll Warbler, (immature).
- d². Pale cream buff below, especially on flanks. Bay-breasted Warbler, (immature).
- ?? No white bars on wing.
 - a¹. Tail with white spots, blotches, or patches.
 - b¹. Wings, rump and tail bluish gray. Prothonotary Warbler.
 - b². Wings, rump and tail not bluish gray.
 - c¹. Under parts decided yellow, no white patch at base of primaries. Hooded Warbler, (female and immature).
 - c². Under parts pale yellowish, a white spot at base of primaries. Black-throated Blue Warbler, (female).
 - a². Tail without white spots, blotches or patches.
 - b¹. Crown different color from back.
 - c¹. Crown or forehead black.
 - d¹. Crown black, forehead yellow. Wilson's Warbler, (adult).
 - d². Crown not black, forehead black. Northern Yellow-throat, (male).
 - c². Crown or forehead neither of them black.
 - d¹. Crown ashy with concealed chestnut patch in center, eye ring white. Nashville Warbler.
 - d². Crown feathers orange at base; eye ring yellow. Orange-crowned Warbler. (Hypothetical List).
 - b². Crown same color as back.
 - c¹. Belly white or whitish and distinctly contrasted with the yellow throat and breast.
 - d¹. Black spot before the eye. Yellow-breasted Chat.
 - d². No black spot before the eye.
 - e¹. Outer tail feathers shortest. Northern Yellow-throat, (female).
 - e². Outer tail feathers same length as others; white eye ring. Nashville Warbler, (immature).
 - c². Belly yellow or yellowish.
 - d¹. White spot on wing at base of primaries. Black-throated Blue Warbler, (female).
 - d². No white spot on wing at base of primaries.
 - e¹. Inner web of tail feathers yellow. Yellow Warbler, (female).
 - e². Inner web of tail feathers not yellow.
 - f¹. Forehead yellowish. Wilson's Warbler, (immature).
 - f². Forehead not yellowish.
 - g¹. Under tail coverts white, Tennessee Warbler, (immature).
 - g². Under tail coverts not white.
 - h¹. No eye ring; outer tail feathers shortest. Northern Yellow-throat, (female).

- h². White eye ring present.
 - i.¹. Back ashy greenish. Orange-crowned Warbler, (immature).
 - i². Back olive green, washed with brownish. Nashville Warbler, (immature).
- §§. Throat not yellowish, yellow or orange colored.
 - ?. Belly yellow.
 - a¹. Throat black. Hooded Warbler.
 - a². Throat not black.
 - b¹. White eye ring present. Connecticut Warbler.
 - b². White eye ring not present. Mourning Warbler.
 - ???. Belly not yellow but white or whitish.
 - a¹. Back and crown blue. Black-throated Blue Warbler, (male).
 - a². Back and crown not blue.
 - b¹. Back and crown bright olive green. Black-throated Green Warbler.
 - b². Back and crown not bright olive green.
 - c¹. Center of wings and base of tail salmon color. American Redstart, (male).
 - c². Center of wings and base of tail not salmon color.
 - d¹. Cap, throat and sides chestnut; no white line through center of crown. Bay-breasted Warbler, (male).
 - d². Cap, throat and sides not chestnut; a white line through center of crown. Black and White Warbler, (male).
- B. Plumage *streaked* or *spotted* below on breast, sides or belly.
 - 1. Throat white, streaked or unstreaked.
 - §. Back not spotted or streaked.
 - ?. No white or yellow spots in tail.
 - a¹. Center of crown rufous, bordered by black. Oven-bird.
 - a². Center of crown not rufous, not bordered by black.
 - b¹. Line over eye white; wing over 3.00. Louisiana Water Thrush.
 - b². Line over eye buffy; wing under 3.00. Water Thrush.
 - ???. Tail with white or yellow spots.
 - a¹. Base of primaries and base of tail feathers yellow. American Redstart, (female and immature).
 - a². Base of primaries and of tail not yellow.
 - b¹. Back greenish; cheeks yellow. Black-throated Green Warbler, (immature).
 - b². Back and cheeks grayish. Cape May Warbler, (female and immature).
 - §§. Back spotted or streaked.
 - ?. Sides streaked with chestnut.
 - a¹. Wing bars white; wing over 2.50. Bay-breasted Warbler, (female).

- a². Wing bars yellowish or yellow; wing under 2.50. Chestnut-sided Warbler.
- ?? Sides not streaked with chestnut; under parts or sides streaked with dark.
 - a¹. Crown with yellow patch in center; yellow patch on rump. Myrtle Warbler.⁴
 - a². No yellow patch in center of crown.
 - b¹. Crown with white central streak, otherwise black. Black and White Warbler, (female).
 - b². Crown without white central streak.
 - c¹. Crown pure black. Black-poll Warbler, (male).
 - c². Crown olive green, streaked with black. Black-poll Warbler, (female).
- 2. Throat yellow, yellowish or orange.
 - §. Under parts streaked or spotted with *black*.
 - ? Back ashy gray; a necklace of black or dusky spots across throat. Canadian Warbler.
 - ?? Back not ashy gray.
 - a¹. Back spotted or streaked with *black*.
 - b¹. Centre of crown orange or yellowish; throat yellow or orange, unstreaked. Blackburnian Warbler.
 - b². Center of crown not orange or yellowish.
 - c¹. Head bluish gray or ashy and rump yellow. Magnolia Warbler.
 - c². Head not bluish gray or ashy.
 - d¹. Two whitish or white bars on each wing. Black-poll Warbler, (immature).
 - d². Only one white patch or bar on wing; cap black. Cape May Warbler, (male).
 - a². Back neither spotted nor streaked with *black*.
 - b¹. Crown patch yellow, contrasted to rest of crown. Blackburnian Warbler.
 - b². No yellow crown patch contrasted to rest of crown.
 - c¹. Wings without bars, olive colored; 3.00 or more in length. Water Thrush.
 - c². Wings with either one or two white patches or bars.
 - d¹. Only one white patch on wing. Cape May Warbler, (female and immature).
 - d². Two white patches or bars on wing.
 - e¹. Cheeks bright yellow; outer web of outer tail feather white at base; inner web of outer tail feather entirely white. Black-throated Green Warbler, (immature).
 - e². Cheeks not bright yellow; outer tail feather white on inner web only and near tip. Pine Warbler.

§§. Under parts not streaked or spotted with *black*; under parts spotted or streaked with *rufous brown*.

? . Crown chestnut. Yellow Palm Warbler.

?? . Crown not chestnut.

a¹. Tail fuscous; inner web of tail feathers yellow; under parts bright yellow; forehead yellow. Yellow Warbler.

a². Inner webs of tail feathers not yellow; a yellowish eye ring; under parts yellow, washed with brownish. Yellow Palm Warbler, (immature).

Genus MNIOTILTA Vieillot.

636. *Mniotilta varia* (Linn.). Black and White Warbler; Black and White Creeping Warbler; Black and White Creeper.

Plumage of adult male: upper parts streaked with black and white; a white line through crown bordered by black; wings black with white band; tail black with white patches on inner webs of outer feathers; throat and upper breast black, sometimes streaked with white; sides and breast more or less streaked with black and white. Middle of belly usually white. Plumage of adult female: sides washed with brownish; less strongly streaked below but very similar indeed to the male, though in most cases readily distinguished. Immature plumage: streaked with brownish above and washed with same on throat and sides; obscurely streaked below with grayish black, otherwise in general like adults. Wing 2.75; tail 2.00.

Geog. Dist.—Eastern United States, west to the Plains; breeding from North Carolina, central Texas and Kansas northward to Newfoundland, Hudson Bay and Fort Norman Mackenzie, and rarely breeding in Colorado and California; wintering in the Greater Antilles, Mexico and Central America.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; found *locally* throughout the County but seemingly not especially common, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; quite common summer resident, both inland and on the wooded islands of the coast, but withal very local, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer resident, (Norton). Oxford; breeds commonly, (Nash). Penobscot; very common migrant, fairly common summer resident, *local*, (Knight). Piscataquis; common summer resident, (Whitman). Sagadahoc; common migrant, (Spinney). Somerset; common summer resident, (Morrell); common but *local* in the northern woods, (Knight). Waldo; summer resident, found even on the wooded islands, *local*, (Knight). Washington; common summer resident, (Boardman). York; very common summer resident, (Adams).

Though according to Mr. Brown occasionally arriving as early as April thirtieth, the species more often arrives in southern Maine about May third and in central and northern Maine four to ten days later. In the fall the majority are gone from near Bangor by September nineteenth, and from near Portland at latest by the middle of October as recorded in Mr. Brown's list. The species is, par excellence, well deserving of the title of Creeping Warbler, for it creeps up and down the trunks of trees, head up or down, runs around the limbs and under the branches, peering into the crevices and crannies of the bark. Here it finds worms, beetles, grubs, eggs of moths and other insects, cocoons, spiders, caterpillars and similar forms of life which it eagerly devours. I have rarely seen them creeping about over fallen moss-covered logs in a similar search for food. When they have exhausted the resources of one tree they take short flight to another and resume feeding.

In the breeding season the species is a bird of the woodlands, seemingly most often found in rather open hardwood growth, sometimes in the upland type of woods, more frequently perhaps in the lower, richer, damper tracts of hard or mixed growth. In the northern spruce woods of the State the species is very rare, and though found locally even in quite goodly numbers it is missing from extensive tracts of land where coniferous growth predominates. In southern Maine the species seems to occur more generally though still local during the nesting season.

The nest is always placed on the ground, on a mossy hummock, by the side of a stump or log, under a bush or beneath the upturned roots of a tree or in a very similar situation to those described. A typical set in my collection was taken, May 27, 1896, from a nest placed on the ground near a mossy log, and was composed of leaves, strips of fine fibrous bark and grasses, lined with grasses and fibrous roots of a black color. The eggs are distinctive and characteristic, pure white spotted with chestnut, umber and lavender. Some eggs

are merely spotted with no indications of being wreathed, but in mine the spots and blotches tend to aggregate into a rather open wreath about the larger ends and a few spots are scattered over the surface, being on the average smaller and fewer toward the smaller ends. The eggs measure 0.65×0.54 , 0.65×0.53 , 0.69×0.56 , 0.63×0.54 . Nest building in Maine commences as early as May fifteenth, sometimes even earlier, and full sets of four or five eggs are found by May twenty-fifth to the thirtieth and occasionally belated layings as late as the middle of June. Unless found while the female is building, the nest can usually be located only by flushing the incubating female from directly under your feet. I am not prepared to state what aid the male gives in building or in the task of incubation, but he is generally in the vicinity to respond and add his voice to the tumult when the female is disturbed, and he also helps feed the young.

The call notes of this species are quite variable, generally the alarm note being a "tsip" or "chick." Mr. Minot gives the alarm note as "chick-a-chick, chick-chick" and describes the song as "wee-seé, wee-seé, wee-seé, wee-seé, wee-seé." Mr. Burns has recorded the migrating song as "A thin wiry sibilant of repeated syllables, or a series of double syllables, ending in both cases with two shorter syllables. The one type represented by the syllables "tse tse tse te te" and the other by "ki-tse ki-tse ki-tse se se" (Burns, Warbler Songs, p. 22). My observation of the ordinary song would incline me to the following syllables "zie-zie-zie-tity."

Genus PROTONOTARIA Baird.

637. *Protonotaria citrea* (Bodd.). Prothonotary Warbler.

Plumage of adult male: rump bluish gray; back greenish or olive yellow; wings and tail blackish, edged with ashy so as to have a general ashy appearance; inner webs of some tail feathers white; head, neck and under parts lemon yellow, deepest on crown, paler on belly. Plumage of adult female: the yellow parts paler and with whiter area on belly. Immature

plumage: brownish rather than yellow below; yellowish on back, otherwise above in general brownish olive green; otherwise similar. Wing 2.93; tail 2.10.

Geog. Dist.—Eastern North America, breeding from Florida to Virginia and western Delaware, and from northeastern Texas to southern Michigan, Iowa, Nebraska, Kansas, Wisconsin and Minnesota; casual in Maryland, Pennsylvania, New Jersey, New York, Rhode Island, Massachusetts and Maine; wintering in Mexico, Central and northern South America.

County Records.—Washington; Mr. Boardman took one at Calais, October 30, 1862, (B. N. O. C. 3, p. 153).

We have only one record for the species in Maine, it being a straggler only, and even in southern New England the records are few. I know nothing regarding the habits of this species save what is taken at second hand, but will do the best possible in compiling such data as is available from the notes of others. The species is said to frequent the borders of ponds, streams and willow swamps in the west.

The nests are placed in deserted holes made by other birds or in natural cavities in stumps and trees, at elevations from two to fifteen feet from the ground, often the stump being standing in or over the water. Four to seven usually five or six eggs are laid. These are quite nearly oval, glossy, creamy white or buff, coarsely blotched, and both sharply and obscurely marked with cinnamon brown, chestnut, and purplish gray. A set with nest in my collection was collected for me near East Dubuque, Illinois, June 6, 1897. The nest was placed in a cavity in a birch stump, six feet from the ground in a swamp near the Missouri River. The diameter of the cavity was four inches and the depth six. The nest proper was composed of decayed matted leaves and moss lined with fine grass culms. The height of the nest outside was two and a half and inside one inch, while the diameter externally was three and internally two inches. The eggs measure 0.69×0.59 , 0.72×0.60 , 0.74×0.59 , 0.70×0.60 , 0.72×0.59 , and there was also a Cowbird's egg measuring 0.86×0.67 in the nest, which shows the extreme to which a Cowbird will go to find a nest to deposit its eggs in.

The song has been described as "peet, tsweet, tsweet, tsweet, tsweet, tsweet" sounding like a Solitary Sandpiper in the distance, (Warbler Songs, p. 25). Mr. Brewster records the song as "peet, tweet, tweet, tweet." (B. N. O. C. 3, pp. 153-162). The food is reported to consist largely of various species of insects.

Genus HELMINTHOPHILA Ridgway.

645. *Helminthophila rubricapilla* (Wils.). Nashville Warbler.

Plumage of adults: center of crown with a more or less visible patch of chestnut, the remainder of crown and sides of head bluish gray; wings and tail olive brown, edged with olive green; back and rump olive green; below yellow, paler or whitish on belly. Immature plumage: wood brownish above, slightly tinged with olive green and brighter on rump; sides of head brownish ashy; eye ring very pale buff or whitish; sides brownish; below yellowish wood brown, brighter yellow on breast. Wing 2.35; tail 1.84.

Geog. Dist.—Eastern North America, breeding from Massachusetts, Connecticut, northern New Jersey, northern Illinois and northern Nebraska northward to Newfoundland and the Great Slave Lake region; passing to winter quarters through the Central States and eastern Texas; accidental or casual in Greenland, South Carolina and Florida and seemingly not recorded from Alabama, Mississippi or Louisiana. The winter range is in the states of Puebla, Vera Cruz, eastern Oaxaca, Chiapas, Campeche, and rarely south into Guatemala, and north to the Rio Grande River and Texas. (Cooke).

County Records.—Androscoggin; common migrant, fairly common summer resident, (Johnson). Aroostook; rather common summer resident, throughout, (Knight). Cumberland; common migrant, (Mead); common summer resident, (Brown, C. B. P. p. 6). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds, (Nash). Penobscot; common in migrations and also as summer resident, (Knight). Piscataquis; not common, breeds, (Homer). Sagadahoc; (Spratt). Somerset; quite common summer resident, (Morrell); common in northern sections, (Knight). Waldo; uncommon at Islesboro in 1899, (Howe, J. M. O. S. 1900, p. 31); common summer resident, (Knight). Washington; common summer resident, (Boardman).

The Nashville Warblers do not hurry into Maine at the approach of spring weather, but rather prefer to await the time when warm weather is more surely established. They

appear in southern Maine about May seventh, and in the region about Bangor the average date of arrival is about May fifteenth, varying from as early as the tenth to as late as the twentieth. During migration they may be found in scattered bands, (associated with other Warblers and very often accompanied by one or two Tennessee Warblers as well,) frequenting the edges of woods and thickets. They are almost always at this season to be found in alder thickets and bushes bordering roads, brooks, rivers, ponds, or lakes. A smaller proportion of individuals may be found scattered by ones and twos through the open hard wood growth and in the taller trees.

They are quiet, unpretentious little busy bodies, silently passing from twig to twig in search of food. They do not seem to make any particular demonstrations of love or affection for their companions, nor have I ever observed the ceremony of selecting their mates, though it must be gone through with, as it is in the case of our other Warblers.

During the nesting season they frequent rather open hard wood growth, or second growth thickets, placing their nests on the ground at the foot of a shrub or bush, or on a hummock concealed in the moss. It takes seven to nine days to build the nest, and on its completion an egg is laid each day until the set is completed. The eggs are usually laid between six and ten in the morning. The process of incubation begins as soon as the first egg is laid. Four is the most frequent number laid but sets of three or five are also found. The ground color of the eggs is white and they are minutely speckled and spotted with dots of reddish brown, lilac and shades of intermediate color. Three eggs observed at Fort Kent, July 10, 1904, measured 0.66×0.46 , 0.64×0.48 , 0.64×0.49 . The nest was composed of fine moss, fine grass and spruce twigs, lined with pine needles and fine grass, and it was situated on the ground on an open wooded hillside at the foot of and between two small spruce trees, and was well imbedded in the moss. It measures in depth outside one and three-fourths inches, and

inside one inch, the diameter outside was three and a quarter and inside one inch. Nests from central Maine contain less moss and twigs and more pine needles and grass but are very similar otherwise. The earliest date I have found fresh eggs near Bangor is June third and the latest July fourth, which is very exceptional and due to a very late rainy season.

Nest building begins soon after the birds have arrived, and presumably the female does most of the work, while the male bird perches in a near by sapling and sings leisurely "pea-cie-pea-cie-hit-i-hit-i-hit." One individual which I watched while singing finally deigned to fly down and supervise the nest building, even bringing one or two pieces of fibrous material, but this exertion seemed too much for him and he retired to sing again.

The period of incubation is slightly over eleven days as nearly as I have been able to determine it. One bird relieves the other on the nest and at times when the eggs are very near the hatching point I have seen the male bring insects to its mate on the nest. Possibly he may feed the female at earlier stages of incubation but I have not seen him do so. Both birds feed the young, giving them at first soft grubs and caterpillars, later on small beetles, flies and similar insects. The natal down is sepia brown and rapidly replaced by the juvenile plumage. The young leave about the eleventh day after hatching. They acquire the first winter plumage by a partial moult of the juvenile in late July and are then practically indistinguishable in many instances from the adults. The food of the adults consists of beetles, larvae of various insects and the eggs of various insects. In fact they eat almost anything which they can glean in the insect line from the shrubbery and ground.

The southern migration begins in September. In the vicinity of Bangor they are common as late as September twenty-first to the twenty-eighth, according to season, but they disappear very quickly, many being seen one day and none the next. The

song which I have given previously seems to be the most frequent one uttered near Bangor. Mr. Minot has written the song as "wee-se, wee-see, wit-a-wit-a-wit." The Rev. J. H. Langille renders it as "ke-tse, ke-tse; chip-ee-chip-ee-chip-ee-chip." Mr. Galloway calls it "cheepa, cheepa, cheepa, cheepa, pichepe, chip." Another variation given in Warbler Songs, p. 40 is k-chip; k-chip; k-chip: che-che-che-che." The alarm note or call of anxiety is a suppressed "chip."

647. *Helminthophila peregrina* (Wils.). Tennessee Warbler.

Plumage of adult male: above bright olive green; the top and sides of head grayish or bluish gray; wings and tail brown, edged with olive green; a white spot often at tip of inner margin of outer tail feather; under parts white, slightly tinged with yellow sometimes. Plumage of adult female: crown brown or greenish tinged, never as gray as in male; slightly washed with olive greenish below but otherwise like male. Immature plumage: grayish olive green above, brighter on rump; washed with yellowish below; under tail coverts white. Wing 2.65; tail 1.72.

Geog. Dist.—Eastern North America, breeding from northern New England, northern New York and northeastern Minnesota to the upper Yukon Valley, eastern British Columbia, Quebec, Labrador and Mackenzie; accidental in California; migrating southward through the middle and eastern United States; wintering in eastern Mexico, Costa Rica, Nicaragua and Columbia.

County Records.—Androscoggin; rare summer resident, (Johnson); a nest and four eggs found near South Lewiston, June 4, 1895, and female shot, (C. D. Farrar); seen near Livermore in June, (Swain). Aroostook; occurs in summer and doubtless breeds, not rare through the Woolastook Valley, (Knight). Franklin; common spring migrant, rare summer resident seen at Mt. Bigelow, June 30, 1905, (Sweet). Hancock; rare spring migrant, (Mrs. W. H. Gardner). Kennebec; (Larrabee). Oxford; breeds at Upton, (Maynard, L. B. C. C. N. H. & O. C. Me. p. 7). Penobscot; regular migrant, very rare summer resident, (Knight). Piscataquis; rare summer resident, (Whitman). Somerset; one shot out of a flock of six or eight, May 15, 1896, (Morrell); seen in Pleasant Ridge in early July, 1906, evidently breeding, (Knight). Waldo; (Newell). Washington; common summer resident, (Boardman).

As far as observations go this species arrives from about May tenth to the fifteenth, passing in small scattered flocks of

four or five, often mixed with the Nashville and other migrating bands of Warblers, while in the fall the migrants move along through September, generally being gone by the twentieth as a rule. As a migrant the species is probably not rare anywhere in the State though very likely overlooked or confused with related species. It was years before I discovered them near Bangor, but once seen and identified positively the species became readily found at proper seasons. With most of our birds after the first individuals are found it is easier to discover others.

The species breeds regularly beyond question in northern and eastern Maine, more rarely in the southern sections. That it nests rather early is shown by the fact that Mr. C. D. Farrar found a nest containing five eggs on the ground at north edge of woods at foot of small hemlock bush near South Lewiston, June 4, 1895, and as the parent was shot the identification was absolute. These eggs were advanced in incubation. Mr. Farrar writes that one of the eggs he saved measures 0.63×0.50 and another is a trifle larger. He states that the markings form a wreath about the larger ends of the eggs which seem more pointed than eggs of the Nashville Warbler. I have found nests containing young birds near Bangor on June tenth and fifteenth, so it is evident they nest very promptly after arriving. The nests did not differ appreciably in construction and appearance from those of the Nashville Warbler, being very similarly situated on the ground in a very wet boggy locality among alders on elevated hummocks of moss. Four or five eggs are laid. The eggs are white, wreathed about the larger end with brown and purplish, and measuring about 0.60×0.50 . It is a matter of pure accident to find a nest with eggs as the birds probably do not flush until almost stepped upon, and indeed in the cases where I found nests with young they were so discovered. Such few instances where I have ascertained the food, it consisted entirely of beetles, grubs and small insects, and in brief is probably very identical with that of the Nashville Warbler.

The song of the male is a rather rapidly uttered "twipiti, twipiti, twipiti, twipiti, twipi-wipiwipiwipiwipiwipi" uttered at first slowly, quickly increasing until the syllables run together and ending in a rapid twitter. The alarm call is a "chip" or "tseep."

Genus COMPSOTHTYPIS Cabanis.

648a. *Compsothlypis americana usneæ* Brewster. Northern Parula Warbler; Northern Blue Yellow-backed Warbler.

Plumage of adult male: above bluish gray or grayish blue with a greenish yellow patch in the center of the back; wing coverts tipped with white, forming two wing bands; outer tail feathers with white patch near ends; a band across the chest of chestnut to rufous black; throat and breast yellow, somewhat tinged with rufous and sides washed with rufous; belly white. Plumage of adult female: chestnut in the band across chest more restricted or even lacking; upper parts greener than in male; otherwise very similar. Immature plumage: more brownish olive gray above; wings and tail clove brown, edged with olive green; very similar to adult female in general otherwise. Wing 2.35; tail 1.70.

Geog. Dist.—Breeding from the higher mountains of Pennsylvania and Virginia, and from New York and the New England States north to New Brunswick, Nova Scotia, Prince Edward Island, Michigan, Ontario, Wisconsin, etc.; range not yet well distinguished from that of Parula Warbler though entirely a northern race; wintering in Mexico, the West Indies, Guatemala, Florida, the Bahamas, etc.; migrating through the various states southward to reach winter range.

County Records.—Androscoggin; common migrant, fairly common summer resident, (Johnson). Aroostook; summer resident, very local and seemingly not common, but found even into the Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead). Franklin; rare summer resident, (Swain). Hancock; common summer resident, have found a few nests, (Mrs. W. H. Gardner). Kennebec; common summer resident, (Gardiner Branch). Knox; summer resident, (Norton). Oxford, breeds at Upton, (Maynard, L. B. C. Co., N. H. & O. Co., Me., p. 6). Penobscot; quite common summer resident, local, (Knight). Piscataquis; common, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; it seems to be a not uncommon summer resident of this locality, (Morrell, Me. Sp. Nov. 1898, p. 2). Waldo; local summer resident, not rare, (Knight). Washington; not uncommon summer resident, (Boardman).

Mr. Brown in his Catalogue of the Birds of Portland gives the date of arrival in spring as May ninth to thirteenth and

of departure in fall as early as September, and near Bangor I have found that the species arrives generally about May thirteenth and the last straggler sometimes remains until September twentieth. Between these dates the species is distributed and breeding in nearly every section of the State, though locally distributed, and where found usually rather inclined to be in loosely scattered colonies.

Their favorite habitat is in the trees about the wooded shores of ponds and lakes, along rivers and along the coast and about the shores of many of the wooded islands. Its distribution is nearly coincident with that of the thread-like lichen, *Usnea longissima*, in and of which the nests are always constructed. Where the trees are draped with the hanging clusters of this lichen the Parula is generally to be found nesting, and where this lichen does not occur the Parula need only be sought during migration.

The nests are indeed beautiful objects to behold, largely the work of Nature's architecture, elaborated and shaped by these birds to suit their purpose. Where a suitable bunch of this lichen hangs from a tree, the female Parula will work and hollow it out into a nest with entrance on the side, bringing occasionally more of the same material from neighboring trees to line and fortify the inside of the structure. A typical nest found at Orono, June 8, 1893, was in a maple tree in a swamp at a height of eighteen feet. This nest was composed entirely of *Usnea*. It measured from top to bottom outside seven inches; the diameter of the entrance was one inch; the distance from bottom of entrance to bottom of nest outside three inches; diameter of inside of nest one and a half inches. The eggs were white, finely spotted with a wreath of chestnut, grayish and reddish brown, separated markings around the larger end and sparsely marked elsewhere. They measure 0.66 x 0.58, 0.66 x 0.58, 0.66 x 0.56, 0.64 x 0.55. From May thirty-first to June seventeenth, but usually about the first week in June, is the time when the eggs are laid, and the female

does most of the incubating while the male sings lazily from a perch not far away.

The same nesting site is often occupied in successive seasons, eggs being laid in the very same nest or another nest constructed in a situation close at hand. Sometimes two occupied nests have been found in the very same tree, and generally a few pair nest in the same vicinity. While three to seven eggs are sometimes laid, four or five is more usually the clutch.

The song of the male to my ear sounds much like "ze, ze, ze, ti-ti" or sometimes "ki-ze, ki-ze, ki-ze, see-see." The alarm calls are "chip" or "chick. Burns records a song as sounding like "che-a-wee-a-wee-a-wee." (Warbler Songs, p. 22). Minot notes a song or cry as being "chick-a-chick-chick" (Land Birds p. 102). The male does not seem to take any especial part in family affairs until the young appear when he does his share toward feeding them. It is of course possible that he does his share of the other duties but I have never observed it.

The food consists of the various insects which they glean from the trees and foliage as well as occasionally a few caught in the air. Their more general feeding habit is to hop from twig to twig or sidle along a limb, peering into various crannies and eating beetles, flies, grubs, larvæ, moths, eggs of insects and similar things.

Genus DENDROICA Gray.

Subgenus PERISSOGLOSSA Baird.

650. *Dendroica tigrina* (Gmel.). Cape May Warbler.

Plumage of adult male: crown black, sometimes slightly tipped with greenish; wings and tail black, edged with lighter; the wings with a white patch or band due to the white tippings of the wing coverts; rump yellow or yellowish; outer tail feathers with white spots on inner webs near tip; the two outer primaries sometimes with subterminal white spots; back olive green streaked with smoke gray to blackish; a large yellow patch on each side of neck back of the chestnut ear coverts; under parts yellow, streaked

with black; under tail coverts whitish. Plumage of adult female: grayish olive above, brighter on rump; wing coverts merely edged with whitish, the band being narrower than in male; below yellow, streaked with dusker black than the male; otherwise very similar to male. Immature plumage: pale olive brown above; wings olive brown, edged with olive yellow; tail clove brown, inner webs of feathers yellow, outer edged with olive yellow; below pale yellow, unstreaked to obscurely streaked. Wing 2.70; tail 1.96.

Geog. Dist. — Breeding from northern New England, northern Michigan and northern Minnesota to New Brunswick, Nova Scotia, Hudson Bay, Great Slave Lake, and a few said to breed in the mountains of Jamaica; in other words, a bird of eastern North America, west to the Plains; in migration passing southward, chiefly east of the Mississippi River; wintering almost entirely in the West Indies.

County Records.—Androscoggin; rare migrant, (Johnson); one seen May 6, 1897, (Burbank). Aroostook; a male shot at Fort Fairfield, (Batchelder, B. N. O. C, 7, p. 110). Cumberland; common migrant, (Mead). Franklin; rare migrant, (Richards). Hancock; in June, 1899, I saw one of these Warblers feeding young only a few hours from the nest, (Mrs. W. H. Gardner). Kennebec; (Gardiner Branch). Oxford; probably breeds, (Maynard, L. B. C. Co., N. H. & O. Co. Me. p. 13); from 1871 to '75 bred abundantly about Lake Umbagog in Western Maine, but utterly deserted that region before 1879, (Brewster, L. G. B. of N. E. p. 103). Piscataquis; rare, (Homer). Sagadahoc; rare, (Spratt). Somerset; rare, one specimen taken August 22, 1893, (Morrell). Washington; summer resident of variable abundance, (Boardman).

The Cape May Warbler is a bird of which personally I have little to say as derived from my own observations, as it is a bird I have never seen in life. It must and should occur in the Penobscot Valley, but like many other of the rarer or evasive species it remains sought after for years and when once discovered by the seeker turns up more frequently afterward. The species is however rare and locally distributed in Maine, judging by the data or lack of data at hand.

Mr. Brewster in the Land and Game birds of New England, p. 103, notes the fact that the species nested really abundantly in western Maine near Lake Umbagog from 1871 to 1875 and then deserted the region, and since 1897 he has never detected it anywhere in New England in summer up to publication of this note in 1895. The species seems to prefer to frequent the tops of the evergreen trees in the more densely forested regions

of the State, and doubtless breeds in local abundance in many sections of the unknown wilderness of northern and western Maine.

In Davie's Nests and Eggs, Ed. 5, p. 435, a nest is described which was taken near St. John, New Brunswick, on June 16. This nest is said to be somewhat similar to that of the Magnolia Warbler, composed of small dry spruce twigs, grasses and spiders' webs, interwoven and lined entirely with horsehair. It was placed less than three feet from the ground in a cluster of low cedars growing in an exposed situation on a rather open hillside. The eggs were said to measure 0.69×0.49 , 0.65×0.49 , 0.66×0.49 , 0.66×0.48 . They were dull or buffy white, speckled and spotted about the larger ends with dark brown, reddish brown and lilac gray. As other observers mention the fact that in summer the species is found in the highest evergreen trees the situation of this nest might seem to have been unusual. The only record of the note of this species is in Butler's Birds of Indiana where he describes the song as "a-wit-a-wit-a-wit-a-wit-a-wit." It is to be regretted that we know nothing more regarding the domestic life of these birds.

Subgenus DENDROICA Gray.

652. *Dendroica aestiva* (Gmel.). Yellow Warbler; Summer Yellowbird; Summer Warbler; Golden Warbler; Blue-eyed Yellow Warbler; Spy-about; Garden Warbler.

Plumage of adult male: above bright greenish yellow, becoming stronger on the crown; below golden lemon yellow, brightly streaked with pale chestnut on the throat, breast and sides; wings edged with and inner veins of tail feathers bright yellow; tail fuscous. Plumage of adult female: slightly paler than that of male; streaks on the throat, breast and sides few and not so bright; wings slightly more fuscous. Immature plumage: no streaks on breast, throat or sides in juvenile plumage, becoming rather sparingly streaked in first winter plumage; dull lemon yellow below. Wing 2.30 to 2.60; culmen 0.41; tarsus 0.73.

Geog. Dist.—The breeding range includes North America in general, exclusive of Florida, Georgia, the north Pacific coast (inhabited by local race)

and southwestern United States (local race there); including local subspecies and varieties the species breeds northward to 70° latitude; winter range Central America, United States of Colombia, Peru and Mexico.

County Records. — Androscoggin; common summer resident, (Johnson). Aroostook; summer resident, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; abundant summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; abundant at Norway, (Verrill, L. B. N. P. E. I. 3, p. 136 et seq.). Penobscot; very common summer resident, (Knight). Piscataquis; rare summer resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; quite common summer resident, (Adams).

The species in question is perhaps one of our commonest summer birds, being very generally distributed and common throughout the State though always lacking in the deep evergreen woods, and hence not found in many sections. Neither is it characteristic of any particular faunal area, being found nearly throughout temperate North America. In southern Maine the date of arrival in the spring is somewhere about May 11, sometimes even as early as May 5, while in the northern part of the State it may not arrive until May 18. The fall departure begins in late July and by the last of August the majority have departed, though exceptionally the species has remained near Bangor until September 10.

It is in full song soon after its arrival and the cheery "we-che, che, che, che, cheery wee" or sometimes "weeche, weche, weche-we-we," may be heard frequently in the low shrubbery of garden and orchard. Another song is "sweet sweet sweet sweet sweeter sweeter." This song always brings to my memory the alder fringed brooks where I coaxed the gamey trout from his eddying pool, and it is only a question of time until the trout fever arises to such a pitch as to require appropriate treatment. These little Warblers prefer to frequent gardens and orchards in settled localities, returning season after season to the same places, while they also may be commonly found among the alders of brook and riversides. The male sings

every minute or so during the day in early summer and diligently assists the female in nest building, both by actual construction work and well timed song of encouragement.

Alders, bushy thickets, shrubbery in gardens, orchard trees and thickets along banks of streams and rivers are selected as nesting sites. The nest is a very compactly built and well cupped structure, composed of fine soft grasses and rootlets, soft hempen fibers, cottony down from the willow catkins, pieces of thread, twine, cloth, shreds of paper, and similar soft material, lined with willow down and a few feathers. A typical nest from which the foregoing description is made measures two and a quarter inches in height outside, depth of inside cavity one inch, diameter at bottom outside two and a half inches, diameter of cavity across top one and a half inches. This particular nest was situated in a small bunch of alders thirty-three inches from the ground in a bushy meadow along the Stillwater River at Orono.

The eggs are of a greenish white ground color, very heavily wreathed with cinnamon brown, black and lilac about the larger end, and measure 0.66×0.52 , 0.67×0.51 , 0.67×0.51 , 0.68×0.51 . Other eggs seen sometimes have a bluish white ground color, and the markings are sometimes more inclined to umber brown. Generally the eggs are wreathed about the larger end rather heavily, but sometimes the eggs are only slightly or not at all wreathed, and while nearly always a few small spots are loosely scattered over the surface, sometimes the whole surface is quite evenly dotted.

Nest building, which both parents assist in, requires a period varying from a week to ten days and fresh eggs may be found from May twenty-ninth to even as late as early July. It seems quite likely that these late sets may result from the birds having been robbed or otherwise disturbed in their first efforts. Sometimes a Cowbird deposits its egg in a Yellow Warbler's nest, in which case they often build a new nest on top of the old one, thus effectually stifling the intruding egg,

or desert the site entirely. Rarely when their own eggs are incubated they will accept the egg of the intruder. Four or five eggs are usually laid, an egg generally being deposited each day, though rarely sometimes a day is passed without laying.

In some instances the bird begins to incubate as soon as the first egg is laid, while in other cases incubation has not seemed to be commenced in earnest until a day or two after the last egg was laid. In cases under observation the incubation period has seemed to range from twelve to fifteen days from the time of laying of the first egg to the hatching of the first young in cases where the birds seemed to have actually begun incubating as soon as an egg was laid. Owing to lack of time to observe them closely the exact cause of variation cannot be given but it seems quite possible that difference in persistence in incubating may account for the discrepancy.

The young birds are naked when hatched, but within two days are covered with mouse gray down. The first pin feathers appear at the end of about six days and in a period varying from eleven to fifteen days they are ready to leave the nest.

The food of the parents consists of small soft larvæ of Lepidoptera such as canker worms, tortricids and similar larvæ which they also feed their young in considerable amount, in addition to which small beetles and bugs of almost any sort are eagerly eaten. They catch quite a bit of their prey on the wing, and I have seen them thus take quantities of adult currant saw-flies while they also eat large numbers of the larvæ of the currant saw-fly. The male bird sometimes assists in the work of incubation and very rarely indeed even sings while on the nest. He frequently visits and feeds the female while she is incubating, and in fact seems a very model and affectionate husband.

* 654. *Dendroica cærulescens* (Gmel.). Black-throated Blue Warbler.

Plumage of adult male: wings and tail black, edged with blue; base of primaries white, thus forming a white spot or bar on wing at end of the

coverts; white patch near end of inner web of outer tail feathers; above a general bluish gray or grayish blue, sometimes more blackish blue on back; the sides of head and the throat black, the black extending along the sides where it is mixed with white; breast and belly white. Plumage of adult female: olive green above or occasionally slightly bluish tinged; white spot near end of outer tail feathers fainter and harder to distinguish sometimes; white patch at base of primaries smaller and less readily found; dirty whitish, sometimes faintly yellowish below. Plumage of immature male: olive brown above in juvenile and bluish gray in first winter plumage; tinged with yellow on throat and abdomen; in general similar to adult male but with less black on sides and more greenish washed above. Plumage of immature female: wings duller brown than in adult; yellower below; in general very similar to adult female. Wing 2.58; tail 2.15.

Geog. Dist.—Breeding from the mountainous regions of Pennsylvania and northern New England to Newfoundland, Quebec, and westward to Michigan and northern Minnesota; migrating southward rarely found west of the Mississippi River save occasionally in Iowa and Missouri, and accidental in Nebraska, Kansas, Colorado and New Mexico; wintering at Key West, Florida, Cuba, Haiti and Jamaica; accidental in Central and South America.

County Records.—Androscoggin; fairly common migrant, rare summer resident, (Johnson). Aroostook; rather common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 109); common summer resident of the Woolastook Valley, (Knight). Cumberland; common migrant, (Mead). Franklin; rare summer resident, (Swain); common summer resident, (Sweet). Hancock; an uncommon fall migrant, (Mrs. W. H. Gardner): local summer resident, (Knight). Kennebec; summer resident, (Gardiner Branch). Knox; rare migrant, (Rackliff). Oxford; common and breeding at Upton, (Maynard, L. B. C. Co. N. H. & O. Co. Me. p. 8). Penobscot; common migrant, locally common summer resident, (Knight). Piscataquis; common, (Homer). Sagadahoc; several specimens from October 15 to the last of the month in 1899, (Spinney). Somerset; rare summer resident, (Morrell); locally common summer resident of the "great woods," (Knight). Waldo; migrant, rare summer resident, (Knight). Washington; not abundant summer resident, (Boardman). York; migrant, (Adams).

In the spring migration this species enters the State about May fifteenth, and individuals may be seen in central Maine about May twentieth, while the northern sections are reached a few days later. The species is quite common in migrations, most often being found in rather open, mixed growth, flitting from tree to tree, catching various insects on the wing in imitation of a Flycatcher.

By early June most of the individuals have passed beyond southern Maine, while in the portions of the northern and

western counties within Canadian faunal limits nest building has commenced. At this season the song of the male may be heard as it is uttered from the branches of some rather low tree, and it consists of a rather sweet succession of notes sounding like "pe-wee-wee-se-zewee," or sometimes shortened into "swee-swee-swee."

The nest is almost invariably placed in a low evergreen tree in rather thick woods or heavy undergrowth. Four eggs taken at Lincoln, June 10, 1896, were in a nest composed of bark and fine sedges, lined with fine vegetable fibres. It was placed in a low fir tree about three inches from the ground in dense underbrush, the exterior diameter of the nest is four inches and the interior diameter two and a quarter inches. The exterior depth is two and a half inches and the interior depth one inch. The eggs measure 0.65 x 0.50, 0.61 x 0.50, 0.60 x 0.51, 0.65 x 0.50 inches. The eggs are usually four in number, sometimes five, and quite often only three. The ground color is grayish white, somewhat coarsely spotted as well as finely dotted with olive brown, lilac and lavender. The markings are often most numerous at the larger end, but are usually well scattered over the entire surface.

When the vicinity of a nest containing eggs or young is approached the parents manifest some anxiety, flitting from bush to bush and uttering an alarm note much like that of the Chipping Sparrow. Penobscot, Piscataquis, Aroostook, Washington, Oxford and the northern part of Somerset counties are the chief breeding grounds of the species within Maine, and in some sections it may *locally* be called common, though more often rather rare as a summer resident.

In August the southern migration begins and it is highly probable that all have passed out of the State by the middle of September at the very latest. Much, however, still remains to be known about the habits of these birds.

The food consists largely of insects, much of which is caught on the wing, while more or less is gleaned while the birds are flitting about among the foliage.

655. *Dendroica coronata* (Linn.). Myrtle Warbler; Yellow-rumped Warbler; Yellow-crowned Warbler; Willow Warbler.

Plumage of adult male in summer: a yellow central patch on crown, another on rump; wings and tail deep clove brown or blackish, edged with gray; the coverts white tipped forming two white bars on each wing; two outer tail feathers on each side with white subterminal patch on the inner webs; upper parts otherwise ashy bluish, streaked with black; cheeks black; throat white; breast and sides of upper belly marked with black very heavily; yellow patch on each side; otherwise white below. Plumage of adult female in summer: yellow crown patch, rump patch, and yellow patch on each side as in male; above bluish gray with more brownish tinge than in male and less heavily streaked with black; cheeks and auriculars bluish gray; wings and tail brownish rather than blackish and the white wing bands less prominent than in male; below slightly less heavily streaked; in general much like the male but always duller colored. Immature and adult winter plumage: sepia brown above, rather obscurely streaked with black; yellow patches on crown, rump and sides as in summer but duller colored; dull white below washed with buff on throat and sides and rather obscurely streaked with black, edged with whitish on breast and sides; in general quite similar to summer female. Wing 2.95; tail 2.25.

Geog. Dist.—Breeding generally from southern Maine, the mountains of New Hampshire, Vermont, the Adirondacks and Catskills of New York, west to northeastern Minnesota, northward to Labrador, Newfoundland and west to the Northwest Territory, British Columbia, Alaska and the Arctic Ocean; wintering from Cape Elizabeth, Maine (only a few), southward, but chiefly from southern New England and the Ohio Valley to the West Indies, Mexico and Panama.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; common summer resident, (Knight). Cumberland; abundant transient near Portland, six individuals were seen near Pine Point and two secured January 1, 1885, (Brown, C. B. P. pp. 7 & 38); observed at Cape Elizabeth in January and February, 1904, Dec. 25, 1904, and at various intervals in January, 1905, also December, 1905, also last of December, 1906, (Brownson, J. M. O. S. various issues); common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, both inland and on many of the wooded islands along the coast, (Knight). Kennebec; common summer resident, (Larrabee). Knox; summer, (Rackliff). Oxford; common at Upton in breeding season, (Maynard, L. B. C. Co. N. H. & O. Co. Me., p. 8). Penobscot; common summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; rare summer resident, common migrant, (Morrell); common summer resident of the wilds, (Knight). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; quite common, (Adams); December 29 and

30, 1906, saw seven and three respectively, (Mrs. S. R. Abbott, J. M. O. S. 1907, p. 15).

At the approach of warm weather the Myrtle Warblers enter the State from their southern winter homes. Though a few individuals have been recorded as regularly wintering near Portland at Cape Elizabeth (Cf. Brownson, JOURNAL Me. Orn. Soc., March, 1905, pp. 27-28 and *ibid.* 1907, p. 27) this may be attributed to peculiar local conditions. The first individuals usually arrive in southern Maine about April fifteenth to April 22nd, and the usual time of appearance of the species at Bangor is about April twenty-second to April thirtieth. The first individuals reach extreme northern Maine about May first. Common throughout the State during the migration, the individuals gradually diminish in numbers until by the tenth of May practically none are to be found in southern Maine, and, leaving a fair proportion of their numbers to nest in northern, eastern and western Maine within Canadian faunal limits, the tide of migration passes beyond our boundary.

The scattered flocks pass on, leaving here and there a pair of mated birds, in many instances individuals being found frequenting the very same localities from year to year under conditions which would almost warrant the assumption that the very same individual birds had returned to their summer homes. I have observed pairs of these birds which had seemingly appeared over night in their well-known homes of the previous year. They would hang around for a few days, and by May fifteenth to twentieth begin nest building. Other individual males who arrived with the moving throngs evidently were seeking mates, for they made advances to the female contingency, hopping from twig to twig with outspread wings, chipping and fluttering, now repulsed by the fair one, and now accepted by another one to whom advances were made, to finally spend a few days in a favorable spot and begin nest building at a later date than others of their kind, who were apparently old married folks. In spring and fall the call note

is a "chip" or a "check," uttered sometimes on the wing, but more often while busily engaged in seeking for insects from twig to twig. But about the time nest building begins the male perches near the top of some small evergreen tree and utters a pleasing song, consisting of a succession of some twelve to fifteen clear and musically warbled notes much like "swee swee swee swee." The song is very distinct and characteristic of the species, though at least occasionally another different but still characteristic song, a soft, low warble, is heard.

During migration the species may be found in the trees of the city streets, in gardens, on the roofs of houses, and along highways and through the woods, hopping from place to place. As soon as nest building begins, the favorite locality selected is a thicket of evergreen trees near the highway, some open pasture containing a few clumps of scattered evergreens, small thickets of evergreen along the banks of some stream or river or about the shore of a pond or lake, or a row of trees about some country dwelling or in an orchard. In the vast majority of cases an evergreen tree is selected as a nesting site, though occasionally some hardwood tree, such as maple, apple or birch, may be taken. A majority of nests seem to be placed in cedar trees, with fir and spruce following as close second choices. The nest may be placed against the trunk, supported on some small branch extending therefrom, or in a fork made by three or more branches or on top of a limb at some distance from the trunk and even near the extremity of the limb. The height of the nest may be as low as four feet from the ground or as high as twenty-five feet, eight to ten feet up being a fair average.

The foundation of the nest consists of spruce, fir or hemlock twigs from which the spills have fallen. A number of these twigs are arranged and compactly criss-crossed and rounded. Next comes a superstructure, often composed of fine plant fibres and grass stems, and then comes a lining of horsehair and feathers. In some nests the lining is simply hair, but in

most examples feathers play an important part. A majority of the nests I have seen were lined with the feathers from the breasts of various small birds which had been picked up here and there. These feathers were many of them placed so that their bases were imbedded in the bottom of the nest structure and the tips of the feathers arose above the border of the nest and curved until the tips of the entire circle met above the center of the nest, hiding its contents from view. The dimensions of a typical nest are: Diameter, outside, 4.5 inches, inside, 2.25 inches; depth, outside, 1.75 inches, inside, 1 inch.

The number of eggs laid is usually four, often five and sometimes only three. The extreme dates in my possession when fresh eggs were found near Bangor are between May thirtieth and June sixth; a nest found June fourteenth contained young about a week old. The time taken to build a nest is about ten days. The female does most of the work, but the male, occasionally, at least, brings some material and often is present and sings while the female is working. The eggs are usually laid one each day until the set is complete, though occasionally a day may be skipped without laying. Incubation ordinarily begins upon deposition of the first egg, or, at any rate, the female is usually found sitting upon a nest containing only one or two eggs, and which later has four or five eggs as the full complement. The eggs are dull white or creamy white in ground color, wreathed with a circle of spots about the larger end, these spots being of various shades of brown, red-brown, lilac, umber and gray. A few scattered spots may also be found on other portions of the egg, but the spots are usually most frequent and of greater size at the larger end. Occasionally a freak egg may be found, in which the wreathing is about the smaller end, but such cases are rare. A typical set of four eggs taken at Stockton Springs, Maine, June sixth, measure as follows: 0.68 x 0.52, 0.67 x 0.51, 0.70 x 0.52, 0.68 x 0.51 inches. The largest egg of which record can be found measures 0.72 x 0.55. As runt eggs have been known to

occur, there is no limit within reason to the smallness of freak eggs of this or any other species of small birds' eggs. The average dimensions are very close to those of the set of four eggs given above.

The female does most of the work of incubation, but on very rare and exceptional occasions I have found the male bird incubating and even engaged in song while on the nest. The time in one case which elapsed between the laying of the first egg and the hatching of the first young bird was two hundred and ninety-five hours, plus or minus an error of an hour and forty minutes. It was not known by me nearer than within some forty minutes of the exact time when the first egg was laid. The first egg to hatch was pipped for some hours before the young bird finally emerged from the shell. The time when the young bird was finally triumphant is not known within two hours and forty minutes, as this period of time elapsed between visits when it was found not hatched and hatched. The period of incubation is thus shown to be doubtless between twelve and thirteen days.

The natal down rapidly dries and fluffs out on the young birds and is sepia-brown in color. At the end of six to seven days pin feathers begin to appear, and by the twelfth to fourteenth day the young are well advanced in their juvenal plumage and able to scramble out of the nest. Two to three days after leaving the nest they are able to assay short flights. I am inclined to believe that where the nest is visited frequently for the purposes of observation the young reach the stage where they scramble out and away much sooner than were they left undisturbed, but in this latter case one could not make the necessary observations.

The juvenal plumage above and below has a generally streaked appearance. Above, the centers of the feathers are blackish, edged with drab and yellowish brown; below, much the same general appearance, but far lighter with coloration and with a pale yellow color on the abdomen; wings blackish,

with two indistinct, whitish bars; wing feathers edged with drab; tail blackish, with feathers edged with drab; bill and feet dusky buff.

In August, by a complete moult, the first winter plumage is acquired. This is rather duller colored than the corresponding plumage of adult birds, the black markings and feathers of a duller tint and the edgings of the feathers less gray.

The first nuptial plumage is acquired by a partial moult in early spring and is not quite as brilliant as that of full adult birds. A moult beginning in late July or early August gives the adult winter plumage, which in early spring by partial moult gives the full adult nuptial plumage.

The food of the adult birds in spring and summer consists almost entirely of small grubs and larvæ of beetles and lepidopterous insects, eggs of various species of insects, beetles, mosquitoes, and in fact, almost any insects, their eggs or larvæ which are likely to be found during a careful search of the trees frequented by the birds. Many of the adult insects are taken on the wing, the Warblers taking short springs and flights into the air for this purpose. The young for the first few days are fed on the softer sorts of insects secured by the parents, and later their fare is like that of the parents in every way. Towards fall considerable vegetable food creeps into their diet, doubtless owing to the scarcity of insects. Berries of the Virginia creeper, dogwood of various species, viburnum berries, seeds of the alder, bayberries and doubtless other similar vegetable matter is consumed. I have detailed only such as I have actually seen individuals eating or found in their stomachs.

The last of August the first migrants from the north begin to appear, and by mid-September the migrating hosts are abundant. They dally with us longer than in the springtime, and it is well along toward November before the bulk have withdrawn from the State. I have seen a few near Bangor as late as November 15th, but this is rather exceptional.

During the fall months they enter city gardens and orchards, climb over the roofs and along the gutters of houses, peering into every nook and cranny. They hover on beating wings about such crannies of the clapboards and finish where they may have spied some delicious, big fat spider, chrysalis or other delectable morsel, and such finds are speedily devoured. Now peering, now hovering, and now springing into the air after some winged insect, they stop about a building for a few hours or days, slowly but surely retreating southward, until at last one day in late October or early November they are with us still and the next dawn they are not to be found, nor do we see them until another spring has come.

657. *Dendroica maculosa* (Gmel.). Magnolia Warbler; Black and Yellow Warbler.

Plumage of adult male: white line from eye backward; white patch or bar on wing which closely examined proves to be two connected bars; inner webs of tail feathers with white patches near middle and tail otherwise black; cheeks and forehead black; lower eyelid white; crown bluish gray; back black, some of the feathers very slightly tipped with olive green; wings dark brownish to blackish, the feathers *very* narrowly edged with whitish on outer webs, and rather more widely edged on inner webs so that viewed from below the wings appear whitish to a great extent; rump bright yellow; below streaked and spotted on breast and sides with black; throat and belly bright yellow; under tail coverts white. Plumage of adult female: black of back streaked or not solid like that of male; more greenish to tips of back feathers; in general less heavily streaked below, and streakings slightly duller colored; very similar to male. Immature plumage: back olive green; top and side of head ashy; below yellow rather obscurely streaked on breast and sides with black; belly lighter yellow or whitish; otherwise much as in adults. Wing 2.35; tail 2.00.

Geog. Dist.—Eastern North America, breeding from the more elevated sections of Massachusetts, northern New York, northern Michigan, northern Minnesota and Maine to Newfoundland, northern Quebec, Hudson Bay, Fort Simpson and the Nahanni Mountains; casual in British Columbia; also breeding on higher mountains of Pennsylvania and western Maryland; wintering in the coastal region of Mexico and Central America.

County Records.—Androskoggin; common migrant, fairly common summer resident, (Call). Aroostook; common summer resident, throughout, (Knight). Cumberland; common summer resident, (Brown, C. B. P. p. 7); not rare migrant, (Mead). Franklin; common summer resident, (Swain).

Hancock; one of our most common Warblers, (Mrs. W. H. Gardner); nests on many of the larger islands of the coast, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff); common summer resident near Camden, (Knight). Oxford; breeds commonly, (Nash). Penobscot; quite common summer resident of southern section, common summer resident of northern regions, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; (Spratt). Somerset; quite common summer resident, (Morrell); common summer resident of the northern section, (Knight). Waldo; common summer resident, (Knight). Washington; abundant summer resident, Boardman).

As a breeding bird the Magnolia Warbler is quite characteristic of the Canadian fauna and within its limits a common summer resident throughout the State, and in other sections a very common migrant, but as there are local strips of Canadian faunal areas in almost every county in the State there is indeed not a county where it does not breed at least locally. Near Bangor the usual time of arrival is about May fifteenth, and the last individuals depart by September thirtieth.

As a migrating bird they occur in almost any tract of bushes or woodland, but in summer their dearly beloved home surroundings are among the spruce, fir and hemlock woods of the State. Here they build their nests, sometimes in the deeper woods, but more generally beside a path or old wood road running through the woods, near the edge of a clearing or at least in the edge of the woods near some natural opening. Sometimes nests are placed thirty-five feet from the ground but more often they are in thick spruce, fir or hemlock trees not over ten feet from the ground and often only three or four feet up. Though occasionally eggs are found as early as May thirtieth, the tenth to the fifteenth of June is nearer the average nesting date.

A nest taken June 16 was placed three feet from the ground in a small spruce in a thicket. The nest was composed of fine spruce and hemlock stems and a few grasses, lined with peculiar fine black rootlets. The depth of the nest outside was one and three-quarters and inside one inch while the diameter outside was three and a half and inside one and a half inches.

The eggs measure 0.64×0.48 , 0.64×0.48 , 0.64×0.48 , 0.65×0.50 . Another set of eggs was found June 6, in a nest eight feet from the ground in a thick fir tree. This nest was very similar in construction, and invariably the nests seem to be lined with the very peculiar black rootlets and occasionally horsehair if it be available. The eggs in this nest measure 0.67×0.48 , 0.64×0.49 , 0.66×0.50 . The eggs of the first set mentioned are pure white, wreathed about the larger end with spots of reddish brown, chestnut and lilac and otherwise unspotted. The second set has eggs of a buffy white color, spotted slightly throughout and very heavily wreathed about the larger end with confluent blotches of reddish brown and olive brown and a few suffused blotches of lilac. Three to five eggs may be laid.

The alarm notes are a "chip" a "tsip" and a "cheek." The song most often heard sounds like a warbled "hecho, hecho, he-che-te-e." There are other songs which various observers have put into words far better than I could. Mr. Langille records the song uttered in the south as a soft "whee-cho, whee-cho, whee-cho, whee-cho" and in the north as "chee-to, chee-to, chee-te-ee," while he interprets the breeding song as "cree-e-e-e-e-e." Mr. White has recorded seven distinct variations of song which are as follows: "che-weech che weech che-o;" "pra pra pra r-e-oo;" "prut prut purreao;" "purra-e-whu-a;" "prut-ut-ut-ut-ut;" "d kay kay kay;" "k-e-e-e-dl." The first of Mr. White's songs is very similar to that of the Yellow Warbler.

The food consists largely of beetles, grubs, flies, worms and similar insects. I have seen the birds prying frequently into the deformities on spruce and fir produced by a species of lice-like insects (*Adelges*), and feel very sure that they do good work in destroying these pests, which are becoming very numerous in some sections of the State and injuring the spruce and fir trees.

659. *Dendroica pensylvanica* (Linn.). Chestnut-sided Warbler.

Plumage of adult male: black lines from bill above eyes backward and also from bill down sides of cheek; crown yellow; upper parts streaked with black, margined with whitish on back of neck and with yellowish green on back; wings and tail dull blackish; primaries narrowly margined on outer webs with whitish, on inner webs visible from below also white margined; secondaries margined with yellow on outer webs; the coverts black, tipped with yellow, forming two distinct yellow or yellowish white bars on each wing; outer tail feathers white on inner webs near tips; sides chestnut; sides of head and auriculars whitish; throat, breast and belly white. Plumage of female: black on sides of head and throat duller and chestnut stripes on the sides less heavy than in the male, otherwise very similar. Immature plumage: above bright olive yellow, sparingly or not at all streaked with black; grayish white below; pearl gray on sides of head, throat, breast and flanks; only a mere trace of the chestnut on the sides; otherwise very similar to adults. Wing 2.50; tail 2.00.

Geog. Dist.—Eastern North America, breeding from central Illinois and northern New Jersey, and in the higher mountains of North and South Carolina northward to Newfoundland, Ontario and Saskatchewan; wintering from Guatemala to Panama along the coast and in the lower mountains.

County Records.—Androscoggin; common summer resident, (Johnson) Aroostook; common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 109); very rare in Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common, nests, (Mrs. W. H. Gardner). Kennebec; rare summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident of southern sections, rare northward, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; rare, two spring specimens, (Spinney). Somerset; common summer resident, (Morrell); very rare or local in the northern wilds, (Knight). Waldo; common summer resident, (Knight). Washington; not uncommon summer resident, (Boardman). York; quite common, (Adams).

Sometimes arriving near Bangor as early as May eighth, more frequently from the tenth to the fifteenth, the species occurs here and throughout the State (save locally) as a very common summer resident, though very rare or entirely wanting in the deep, dense evergreen woods that cover the wilder sections of Maine. In the fall they dwindle away through August and by September eighth the last straggler has usually gone. They arrive in scattered bands of two or three, never in large flocks, and depart singly or by twos and threes.

During migration they frequent the more open hard woods and the roadside trees, taking much of their food in the air and leaping after it in short flights much after the style of the Myrtle Warbler. They also busily hunt through the limbs of the trees and over the foliage for tender green caterpillars, beetles, flies, moths and other insects, and such insect eggs as may be found on the bark of trees are greedily devoured. Occasionally a male will tune up and sing "we we we greet chu" in a pleasing warbled tone. Mr. Burns in Warbler Songs, p. 35, has described the song as "te te te te we chu" while Miss Ethel D. Roberts gives another rendering, "tsee tsee tsee happy to meet you." The song is uttered at frequent intervals through the early summer. The alarm note is a "chip" while the call is a soft "tsip."

In the nesting season the species prefers to frequent second growth hard woods, open deciduous woods with bushy undergrowth, scrubby pastures and similar situations, being missing from the deep evergreen woods. A favorite nesting site is where some birch or maple tree has been cut off three or four feet from the ground and the second growth shoots have started up in a fringe around the top of the stub, and within this fringe, on the top of the trunk (when about three inches in diameter) the nest is placed. Many nests are placed in thick bushes, scrub oaks, and similar places, generally not more than two to ten feet from the ground. Eggs are laid from June fourth to July fourth but more usually the second or third week in June, and usually four or five is the full complement.

A typical nest was taken from a small bush three feet from the ground in a hard wood thicket near the edge of a swamp. This nest was composed of fine dried grasses and plant down, lined with hair. It measures two and a half inches in depth outside, one and a half inside, the outside diameter is three and a half and the inside diameter two inches. The eggs measure 0.60 x 0.50, 0.64 x 0.49, 0.62 x 0.49, 0.62 x 0.49.

The ground color of various eggs ranges from white to creamy white, speckled and spotted with rusty brown, chestnut and grayish lilac. Many eggs are wreathed about the larger ends while others are somewhat more evenly spotted all over but nearly always with the tendency of concentration of markings toward the larger end. One egg I have is wreathed about the smaller end and almost unmarked at the larger end, but of course this is a freak.

The male helps feed the young, but I am unable to give any more definite information regarding the domestic life. The food consists of the usual run of insects eaten by the Warblers in general.

660. *Dendroica castanea* (Wils.). Bay-breasted Warbler.

Plumage of adult male: crown chestnut, bordered on sides and front with black; a buff patch on sides of neck; cheeks black; back brownish ashy, streaked with black; wing coverts plumbeous edged and tipped with white, forming two white or yellow tinged bands on wing; inner web of outer tail feathers with white patches near tips; throat, upper breast and sides chestnut rufous; lower breast and belly buffy white. Plumage of adult female: crown olive green, streaked with black and with little if any chestnut; chestnut below the merest band, if any, on breast and a slight washing of chestnut on the sides; otherwise much like male. Immature plumage: above yellowish olive green, streaked with dusky on crown; a few black spots or streaks on the back, generally semi-concealed; upper tail coverts grayish; below cream color, washed with yellow on throat and flanks; flanks with little or no chestnut. Wing 2.90; tail 2.20.

Geog. Dist. — Eastern North America, breeding in northern New England, Nova Scotia, southern Ontario, northern Michigan, and Manitoba north to Hudson Bay and Newfoundland; wintering from the Isthmus of Panama to Colombia, South America; migrating southward chiefly through the Mississippi Valley, and not recorded from Florida, Alabama or Georgia.

County Records. — Androscoggin; rare migrant, (Johnson). Aroostook; very rare summer resident of the Woolastook Valley, (Knight). Cumberland; rare, (Mead). Franklin; rare migrant, (Richards). Hancock; found in small numbers, evidently breeding, (Mrs. W. H. Gardiner); rare in Green Lake region as summer resident, (Knight). Knox; rare in summer, (Rackliff). Oxford; breeds, (Maynard, L. B. C. Co. N. H. & O. Co. Me. p. 9). Penobscot; very rare, even as a migrant, a nest and egg taken near Orono are in the University of Maine collection, and I have also twice found nests near Bangor, (Knight). Piscataquis; migrant, not uncommon, (Homer). Sagada-

hoc; one specimen in spring, (Spinney). Somerset; rare migrant, Carpenter records it as common about Flagstaff Lake where he found nests, (Morrell, Me. Sp. Nov. 1898, p. 2); local summer resident of the northern wilds, especially about ponds, (Knight). Waldo; (Newell). Washington; not uncommon summer resident, (Boardman).

Mr. Brown in his Catalogue records the species as occurring near Portland in the spring about May twenty-second to thirtieth and again in the fall August third to the twenty-sixth. Mr. Brownson records the species as seen on morning of May 14, 1905, near Portland, (J. M. O. S. 1905, p.44). Near Bangor it occurs rarely from May twenty-eighth to the middle of August. The species is rare and local, even in migration, and as a summer resident is chiefly confined to the deeper wilder sections of the State within the Canadian fauna.

In migration the individuals prefer to flutter through the branches of the rather open hard wood groves, generally hopping or flying from limb to limb, often two or three alone by themselves or mixed in the usual jumble of migrating Warblers and Vireos. The only calls I have heard them utter are a "chip" and a "tsip." When the nest with young is approached they utter the "chip" very decidedly. Mr. Maynard has described the song as being in its beginning like that of the Black Poll, terminating with a warble similar to that of the American Redstart. He writes of them as being "the most abundant of the *Sylvicolidae* about Umbagog," but that was years ago and Mr. Brewster has since recorded the fact that the species is now rare in that region. Mr. Sweet records the song as much like "sisser sisser see."

The few pair that remain to nest in southern Penobscot County are to be found in the low, rather swampy maple and birch growth, mixed with firs and spruces. One nest found with four young, June twenty-fifth, was practically on the ground, for though the branch of a spruce shrub was under the nest, the branch was imbedded in the mossy hummock on which the nest was. The other nest, found June fifteenth, was three feet from the ground in a low, shrubby spruce and con-

tained one egg. The nests were composed of small dead spruce and fir twigs, lined with pine needles and peculiar black roots, quite similar in some ways to a *Magnolia Warbler's* nest but more bulky and less cupped. Other observers record nests as being in trees fifteen to twenty feet up. Four eggs seem to be the number laid but probably sometimes, however, they only lay three and again may lay five. The egg in the University of Maine collection is white, wreathed about the larger end with reddish brown, and is accompanied by the nest. This was collected by Robert Fernald, so Prof. Harvey informed me, but no data accompanies the set nor is the extensive series of nests and eggs of other species donated by Mr. Fernald accompanied by any data save that all were collected near Orono. His identifications are unquestionable, however.

In northern Maine I have met with the species in the rather swampy evergreen or mixed growth about the ponds and lakes and judge these localities are their favorite haunts. Mr. Maynard recorded the nests as being in the boughs of an evergreen, usually a hemlock, from ten to twenty feet above the ground and that four or five eggs were laid in northern New Hampshire and Maine in the second week of June. The eggs are stated to measure about 0.68×0.50 , and are bluish green with markings of brown and lilac, generally gathered in a ring about the crown of the egg. (See Minot, L. & G. B'ds, p. 110-111 for transcript of the foregoing.)

Davie records a nest found by W. L. Kells near Listowel, Ontario. One nest was between the slender limb and the trunk of a small cedar about five feet up; another was in a hemlock at an elevation of fourteen feet. The nests are composed of fine shreds of bark, small twigs, fibrous roots and pine hair; the interior is a little more than two inches in diameter by one in depth. The eggs are laid there in latter May or early June and four is the usual number. They are white with a bluish tinge, finely speckled around or on the larger end with

reddish brown; average size 0.70 x 0.50. (Davie, N. & E. N. A. B. fifth Ed. p. 441).

The food consists, as far as I have observed, of insects, and both birds feed the young with grubs and other insects.

661. *Dendroica striata* (Forst.). Black-poll Warbler.

Plumage of adult male: crown black; nape streaked with black and white; back and rump streaked with black and grayish or ashy; wings and tail deep brownish or blackish, edged with lighter or grayish; the wing coverts white tipped, forming two distinct bars on wing; inner webs of outer tail feathers white near tip; ear coverts white; middle of breast and belly white, unstreaked; the sides of throat, breast and flanks streaked with black. Plumage of adult female: slightly greenish or olive tinged above, streaked with black; crown not pure black like in male but streaked with black; streakings below generally narrower than in male to which the general plumage is very similar. Immature plumage: olive green above and on sides of head, obscurely streaked and chiefly on the back with black; wing coverts clove brown, edged with olive green and tipped with white tinged with yellowish, forming two distinct bars; below pale yellow, white on abdomen, and very obscurely streaked with gray on throat and sides. Wing 2.87; tail 2.10.

Geog. Dist.—Eastern North America, west to the Rocky Mountains, breeding from the mountains of New York, northern, eastern and western Maine, northern Michigan and Manitoba northward to Newfoundland, Labrador, Hudson Bay, and northwest to Alaska; the most southern breeding record is Manitou, Colorado; wintering in northern South America; migrating southward through the states east of the Missouri River.

County Records.—Androscoggin; fairly common migrant, (Johnson). Aroostook; common summer resident of the Woolastook Valley, (Knight). Cumberland; common transient near Portland, (Brown, C. B. P. p. 8). Franklin; rare summer resident, (Swain); common summer resident, on Mts. Abraham and Bigelow, (Sweet). Hancock; quite common in the spring, rare in the fall, (Mrs. W. H. Gardner); breeds on many of the wooded islands, (Knight). Kennebec; migrant, (Larrabee). Knox; often common, (Rackliff). Oxford; migrant, (Nash). Penobscot; abundant migrant, a few breed in northern sections and occasionally a pair near Bangor, (Knight). Piscataquis; common on Mt. Katahdin, June 22 & 23, 1897, (F. H. Allen); common migrant, (Homer). Sagadahoc; common migrant, (Spinney). Somerset; rare migrant, (Morrell); rare summer resident of the wilds, (Knight). Waldo; common migrant at least, (Knight). Washington; not uncommon summer resident, (Boardman).

As a spring migrant the species occurs very generally and commonly throughout the State, arriving from May tenth to

the twentieth and passing along by the eighth of June, being very noisy and singing more or less constantly from the tree tops so as to attract ready attention to its presence in spring. In the fall the cohorts are fully as plentiful and inclined to be in bands or flocks, but are silent and move southward from September eighth to October sixth without giving cause for notice save to those seeking for them. As a summer resident the species is confined to those sections of Maine within the Canadian and Hudsonian faunæ, being rather ultra Canadian as a rule.

In migration they frequent the higher deciduous trees of the city streets and highways, and the higher as well as lower trees and bushes of the more open woods and groves, tending as they pass northward more and more to evergreen woods until when they reach their northern homes they are almost exclusively confined to evergreen woods. Their song sounds like a shrill, high pitched, monotonous "zip zip zip zee ze te." Minot renders it as "tsi tsi tsi tsi tsi" while Jones in Warbler Songs gives it as "tsip tsip tsip tsee tsee te." The alarm call is "chip" or "tsip."

The nests are built in evergreen trees, generally in spruces or firs, at elevations of from four to ten or twelve feet from the ground. The foundation of the nests is small spruce or fir twigs, and the nests proper are made of lichens, rootlets and fine grasses, lined with fine rootlets, grasses or feathers. The eggs are four or five in number, and vary in ground color from white to buffy or greenish white, spotted, blotched and speckled with cinnamon or olive brown and lilac gray. Many eggs are finely speckled all over but the general tendency is toward a concentration of the markings toward the larger end and the spots are also larger there. The tendency to wreathing about the larger end does not exist and it is only rarely that an egg can be called wreathed. June fifteenth to twentieth is the average date to begin looking for eggs and fresh eggs may even be found in early July. Eggs measure from 0.70 x 0.54 to 0.74 x 0.52.

The food of the species consists of insects of various sorts gleaned from the branches of the various trees or occasionally taken while in the air, and the general run of insects eaten by other Warblers also forms their diet. They do pay quite especial attention to the Adelges or "spruce gall lice" which form disfigurements on the tips of the branches of spruce and fir, and as the Adelges is a great source of injury to the spruces and firs the habit of eating them renders these birds very beneficial to the wild land owners.

662. *Dendroica blackburnia* (Gmel.). Blackburnian Warbler; Hemlock Warbler.

Plumage of adult male: crown black with a rich orange patch in the center; hind neck, streak across lores, ear coverts and back black; back streaked with whitish; wings and tail clove brown, edged very narrowly on outer webs with pale yellowish or whitish; primaries as viewed from below whitish on inner webs; wing coverts white tipped forming a large white patch on the wings which is really two bands run together; many of the tail feathers largely white on inner webs, best seen from below, and due to large blotches of white, and sometimes the entire inner webs of many feathers as well as outer web of outer one are white to the base; line over eye, and behind ear coverts, throat and breast rich orange; sides streaked with black; belly tinged with yellowish or orange; under tail coverts white or slightly tinged with orange. Plumage of adult female: orange crown patch smaller and duller orange than in male; more ashy olive green above, streaked with black and white or whitish; crown and other black portions of male about head are more grayish brown, never black in female; throat paler orange; white of wings and tail more restricted; in general similar to male. Immature plumage: above deep yellowish olive gray, flecked on crown and streaked on back with black; rather obscure yellow crown stripe or spot; below dull straw yellow, brighter on throat; otherwise very similar to adult female. Wing 2.65; tail 2.00.

Geog. Dist.—Eastern North America, breeding from the Catskill Mountains in New York and the elevated sections of Massachusetts, northern Wisconsin, northern Minnesota, northern Michigan and Maine northward to Nova Scotia, Quebec, Ontario, Keewatin and Manitoba; migrating southward, eastward of central Kansas, central Nebraska and eastern Texas and thence eastward through the various states; wintering in southern Central America and more especially in South America from central Colombia to Peru.

County Records.—Androscoggin; rare summer resident, (Johnson). Aroostook; seldom seen at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 109); locally

common summer resident of the deeper woods, especially along the Fish River Valley and in the Woolastook Valley, (Knight). Cumberland; not very common summer resident, (Brown, C. B. P. p. 8); common migrant, (Mead). Franklin; rare summer resident, (Swain). Hancock; local and where found even a common summer resident, (Knight). Kennebec; very rare summer resident, (Powers). Knox; rare migrant, (Rackliff). Oxford; breeds very rarely, (Rackliff). Penobscot; some years common in migration, others rare, breeds locally and where found even commonly, (Knight). Piscataquis; common migrant, (Homer); heard singing at Mt. Katahdin and elsewhere, (F. H. Allen). Sagadahoc; rare, two specimens in spring, (Spinney). Somerset; not uncommon summer resident, (Morrell). Waldo; local summer resident, (Knight). Washington; not uncommon summer resident, (Boardman).

The species arrives occasionally as early as May eighth, more often about the twelfth, and remains until usually late August, exceptionally until September fifth. Though found in the rather open woods and groves in migration they prefer even then the evergreen woods, and in the nesting season their centers of abundance are the deeper evergreen woods of the State. I have found them breeding in colonies as a rule, that is to say, in a rather dense, mossy carpeted tract of evergreen woods near the pond at Pittsfield, covering perhaps a square mile, there were about ten pair of these birds to be found, and in a tract of similar woods about half this size at Bangor there are often six or eight pair nesting. In other words, in suitable localities they tend to congregate in loosely scattered assemblies, while in less suitable spots, generally none, or at most a single pair will be found. In similar dense, wooded, mossy carpeted tracts of northern Maine, generally along some river or about some pond, they occur likewise.

They prefer to frequent the tops of the higher evergreen trees, hopping about among the branches and sing more or less constantly. In general the male accompanies the female while she is building, singing constantly, and nests can be located by watching the birds while building. The male seems to take no part in nest construction, though doubtless his constant singing encourages his mate. The song is almost exactly as described by Mr. Minot, "wee-seé-wee-seé-wee-seé" or "wee-

see-ick." Another song I have heard uttered is a plain "tsee-tsee-tsee-tsee-tsee-tsee-tsee-tsee" uttered in an ascending scale. Their call is a "chip."

Davie mentions a nest found by Dr. Merriam in New York as situated about eight feet from the ground and ten feet from the trunk on the horizontal limb of a pine tree. He also records nests from northern Minnesota as being twenty or thirty feet from the ground.

In Maine the average is rather higher up, they seeming to prefer to nest in the tops of the taller, slenderer spruces, hemlocks and firs not lower than forty feet and generally higher up. An occasional nest is placed on a horizontal limb quite well out from the trunk, but more generally in the dense tufts near the top of the tree and close to the trunks.

By aid of an opera glass such nests may be quite readily located when the birds have young, as both sexes visit them constantly to feed them. The birds are usually building the first week in June and have eggs by the fifth to the fifteenth. More generally four but occasionally five eggs are laid, these are pale grayish or bluish white, speckled and spotted about the larger ends with olive or reddish brown and lilac gray. A set measures 0.68 x 0.49, 0.68 x 0.45, 0.70 x 0.48, 0.69 x 0.50. The nests are built as a rule with a foundation of spruce or hemlock twigs, then rootlets, fine shreds of bark and lined with feathers and fine rootlets.

Mr. Minot mentions a pair feeding upon ivy berries, and probably this species as well as the other Warblers in general will eat vegetable food when insects cannot be obtained. In general I have found large quantities of the wing cases and harder body portions of beetles in the stomachs of such Blackburnian Warblers as I have dissected, also unidentifiable grubs, worms, larvae of various lepidopterous insects and similar material. As a rule they feed by passing from limb to limb and examining the foliage and limbs of trees, more seldom catching anything in the air.

667. *Dendroica virens* (Gmel.). Black-throated Green Warbler.

Plumage of adult male: bright olive green above; wings and tail blackish, the feathers outwardly narrowly edged with grayish; inner webs of primaries as viewed from below edged with white; wing coverts black, edged slightly with olive greenish and tipped with white, forming two white bands on each wing; inner webs of outer tail feathers white and outer web of the outer feather white at base; ear coverts dusky; line over eye and cheeks bright yellow; throat and breast black; belly white or whitish, tinged with yellow; sides streaked with black. Plumage of adult female: chin yellow, merely spotted with black; black of throat and breast more restricted; in general duller and wings and tail slightly browner than in male but in many very bright females the only difference is in the chin being yellow or merely spotted with black. Immature plumage: similar to adult female but without any black on throat, being a faint yellow below, brighter on cheeks and over eye; concealed or suffused blackish markings on breast, due to the feathers being yellow tipped and black towards base which is largely concealed by the overlapping yellow tips. Wing 2.50; tail 1.95.

Geog. Dist.—Eastern North America, breeding from southern New England, north to Newfoundland and in the mountains of New York and of Pennsylvania, also breeding in northern Illinois, Wisconsin, Minnesota north to Hudson Bay; breeding occasionally in the mountains of South Carolina; migrating southward east of the Plains; wintering in Mexico, Guatemala and Costa Rica.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; fairly common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 109). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common, breeds, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; quite common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common here and nests, (W. L. Fernald).

Mr. Brown has recorded the date of arrival as occasionally as early as April twenty-eighth, more often May sixth to tenth, and the time of departure as the end of September. Near Bangor they most often arrive about May twelfth and are gone by September twentieth. In migration they frequent mixed woods, or even open hard wood growth, and are occasionally found along the highways in bushes and shrubbery.

In the breeding season they resort to the pine woods by preference, and as a result are rather common in the pine barrens of the coastal plain. Inland the species is common and while preferring the pines still, also occurs in rather open mixed woods where cedars, hemlocks and spruces predominate, and in northern Maine is found in spruce woods, seemingly because no other kinds are available.

The nest is variously situated. Mr. Clark mentions that in Washington County it quite frequently builds its nest near the ground. June 25, 1903, he found a nest in a small fir tree not over five feet from the ground and he states he has found other nests not over eight to twelve feet up. Near Bangor the species builds fifty to seventy feet up in the larger, taller pine trees. Mr. Swain's experience with the species is given in full later on.

The food consists almost entirely of insects, including beetles, flies, moths, spiders, grubs, larvæ and in general the sorts of insects found on the limbs and foliage of the various evergreen trees and especially on the pines. Only rarely do they take their prey in the air, preferring to diligently seek it out among the branches and foliage. The typical rather jerky song is frequently uttered and sounds to me like "te he-think-o-me." Their calls are a "chip" a "chick" and a "tsip." The male helps feed the young but I cannot say whether he renders any other aid or not.

Four eggs, more rarely five are laid and these are white or creamy white, spotted, blotched and speckled with olive green, umber, chestnut gray, and occasionally with a few black dots. The spots are largest and arranged in a rather open circle about the larger end, while a few fine dots are scattered over the other portions of the eggs. A set with nest in my collection was taken by Mr. Swain at Cape Elizabeth, May 30, 1896. This nest was placed in a small fir bush, two and a half feet from the ground. It was composed of grass and spiders' cocoons, covered externally with small specks of birch

bark and lined with hair and fine grass. It is two and a half inches deep outside by one and three-fourths inside, while the diameter outside is three and a half and inside one and a half inches. The eggs measure 0.65 x 0.51, 0.69 x 0.53, 0.64 x 0.51, 0.66 x 0.53. The eggs may be found from May thirtieth to July first, usually about June fifteenth. The following notes on this species are taken from an article written by Mr. Swain for the Journal of the Maine Ornithological Society, 1899, p. 33.

"At our last annual meeting, as I was introduced to our editor, Mr. Morrell, he remarked, 'You are the fellow who can find the nest of the Black-throated Green Warbler.' And so, later in the day, I promised him I would write an article on this Warbler, at some future time, giving the *modus operandi* of finding its nest.

I remember well this most interesting Warbler, as I used to watch it, busily feeding about the foliage of the trees, in the woods near my old home, when but a child. And oft did I wonder what was the name of this bright, beautiful bird, with the patch of black on its throat, always so busy, and ever and anon giving utterance to its pleasing song, which once heard is not to be forgotten, and is not like that of any other Warbler. As a child I tried to English it, and it said to me, 'Nee-nee-nee-du-dee.' This leisurely, the first three syllables on the same pitch, the fourth one tone lower, and the fifth one tone lower than the fourth. Then at times, it would quicken its tone to ne-ne-ne-ne-ne-du-dee. The first five at the same pitch of voice, then lowering the last two as before.

Then at times, when leisurely feeding, it would say in a drawly tone, and pitched several tones lower than the above two songs, de-de-de-du-dee. The first two syllables slowly and at a low pitch, the second slightly lower than the first, the last three slightly quicker, raising the tone on the fourth note and dropping back to the same pitch on the last. It is a very pleasing song to me, and one that has brought a deep sense of

pleasure, on very many early morning, woodland strolls, that I have taken in the woods, note-book in hand, in search of bird-life. But the note-book can but poorly record its beautiful song that it pours forth to its Maker, and that blends, so delightfully, with the chorus of voices, and helps to make all Nature so beautiful, on a bright spring morn, that one forgets the cares and perplexities of the day, and soars into a realm of ecstasy and delight, that brings to the mind, more vividly than in any other way, the goodness of the Maker of all that is beautiful. Nor can it record its many delicate movements and pretty ways, as it searches hungrily for the insect life on which it feeds.

I did not succeed in finding its nest until June 12, 1892, and I remember the day as though it was but yesterday. I was up with the sun in the morning and down in its haunts, fully determined to find the nest of *Dendroica virens*, as I knew it must breed there. It was on a slight side-hill where the heavy timber, mostly hemlock, beech, birch and maple had been cut off and had grown up to bushes of maple, beech and blackberry about as tall as my head, and very thickly scattered with clumps of hemlock bushes from five to twenty feet tall. (A very much favored breeding resort of the Chestnut-sided Warbler, Redstart and Indigo Bunting). I located a pair of my birds and watched them intently, as they fed leisurely from one clump of trees to another, all the while trying to give the appearance that they had no thoughts of a nest anywhere around. But as they hung around one large clump of hemlocks, I decided the nest was in that clump or nearby. The trees were too thick to see the nest, so I 'hung around' that clump, too. The birds seemed rather nervous at my staying so near it, and their usual drawly notes were uttered in a nervous, rapid way, that I have learned since, is conclusive evidence that the nest is near. After some time patiently waiting, (with a swarm of mosquitoes making life miserable for me) they grew less concerned at my close proximity and their song was uttered at

much longer intervals when suddenly the female flitted to the top of the tallest hemlock in the clump, and about one foot from the top was the nest, neatly concealed among the thick foliage and quite unnoticeable from below.

I well remember the joy that filled my breast, as I gazed at the nest and realized that, at last, I knew where *Dendroica virens* made its summer home. I had to exercise great care in climbing up to the nest, as the small hemlock was so slim and brittle, that I had to gather several of them together to hold my weight. A very pretty nest met my gaze which the female reluctantly left as I neared it. She did not scold as some birds do, but left in silence, though both birds stayed near by, flitting nervously and giving vent to their call note, that is much like the call note of several other Warblers. The dainty cup-shaped nest as it lays before me—(yes, I took the nest and five eggs that it contained, but with great reluctance.) Many people say, 'How could you take the poor little birds' nest?' This is a difficult question to answer those sympathetic people satisfactorily. They ask this and similar questions as though they thought that the student of birds takes them with as little feeling as does the small school-boy, who takes them because Charlie and the other boys are getting a c'lection. But the true friend and lover of the birds, does have a great deal of feeling and pity for the birds, as he watches them go repeatedly to the site of their nest and seem to wonder what has become of the nest so dear to them. He has a much deeper feeling of pity for them, than does the one who asks these questions with so much seeming pity, but forgets it so soon, perhaps changing their thoughts as to what sort of a bird they shall wear on their hat. (Here let me say that these birds sought a new site in a clump not far away from the old one and reared their four little ones unmolested, and as I watched them building their new nest, I promised them not to interfere with their family cares and they seemed as happy as before and had, no doubt, quite forgotten the unpleasant

experience.) To resume, the nest was twelve feet from the ground and composed of fine spruce and hemlock twigs, neatly woven with fine strips of white birch bark and a few fine strips of the inner bark of the basswood, mixed here and there with fine bits of some woolly cocoon, and a few cobwebs. Then layers of fine grasses, interwoven with quite a quantity of thistledown for a lining, and a few long hairs for an inner lining.

The eggs, five in number, were fresh, with a white ground quite thickly sprinkled with brown and lilac spots, with here and there a few black specks, forming a wreath about the large end. They somewhat resemble the eggs of *Dendroica pensylvanica*, though there is considerable variation in color and markings of *D. virens*, as well as in *D. pensylvanica*. Generally when one finds the Magnolia Warbler (*Dendroica maculosa*) nesting, you will find *D. virens* breeding in the near vicinity. I have examined quite a number of nests in Franklin County, and in Cumberland County, (Cape Elizabeth being a favorite resort). They are quite deeply cup-shaped, and are placed from three feet to thirty-five feet from the ground, always in an evergreen, and often contain feathers, and in shape and appearance, resemble the nest of *Dendroica pensylvanica* or *Setophaga ruticilla*, or most any of our Warblers, though the nest is quite distinctive when one becomes familiar with it. The eggs are generally four in number. I know of but one instance of the Cowbird (*Molothrus ater*) imposing its egg on this Warbler. In this case, one egg had been laid when the intruder dropped its egg in the nest. They left it and built another not many rods away, and laid four eggs, unmolested by the Cowbirds, but May 30 the nest and set was collected and is now in the collection of O. W. Knight.

The nests are very hard to locate in the taller trees, but are much easier found in a more open clearing, with patches of spruce, fir and hemlock, where one can follow the birds more easily. It is generally placed in a fork of a limb near the

trunk, but sometimes is placed out on the branches, so well concealed among the branches, that one has to part them to see the nest. I believe it is a more common breeder throughout our State than is sometimes supposed, but by reason of its nest being so well concealed, and the time it usually takes to locate it, it is easily overlooked."

671. *Dendroica vigorsii* (Aud.). Pine Warbler; Pine-creeping Warbler.

Plumage of adult male: above bright olive green, with ashy edgings to feathers sometimes; wings and tail dusky grayish or blackish, edged narrowly with yellowish or whitish; wing coverts tipped with whitish or yellowish, forming two white wing bars; outer tail feathers with white patches on inner webs near tip; below bright yellow, washed with ashy, sometimes streaked with dusky on breast or sides; belly and lower tail coverts white or whitish. Plumage of adult female: more brownish above and whitish below, only slightly tinged with yellowish on breast and never (?) streaked on breast or sides; otherwise very similar to male. Immature plumage: above olive green, often streaked with dusky or blackish on the back; wing bands more yellowish tinged; below yellowish or whitish, fading to white on belly and under tail coverts; sides merely washed with dusky; otherwise very similar to adults. Wing 2.85; tail 2.20.

Geog. Dist.—Eastern North America, west to the Plains, breeding from Florida and the Gulf States northward to New Brunswick, Ontario and Manitoba; wintering from North Carolina, southern Illinois and eastern Texas through the South Atlantic and Gulf States; occasionally wintering north even to Massachusetts; once seen at Matamoras, Mexico, the first record outside of the United States except casually in the Bermudas.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Cumberland; common summer resident, one nest, (Mead). Franklin; rare migrant, (Richards); common summer resident in Eustis, (Sweet). Hancock; at least a common migrant, (Knight); a pair discovered breeding near Bucksport in 1900, (Mrs. W. H. Gardner). Kennebec; very rare summer resident, (Powers). Knox; have seen evidences of nesting, (Swain). Lincoln; have seen evidence of nesting, (Swain). Oxford; breeds rarely, (Nash). Penobscot; common spring and fall migrant, rare summer resident, (Knight). Piscataquis; I have a specimen from near Dover, (Ritchie). Sagadahoc; common migrant, (Spinney). Somerset; observed here, (Swain). Waldo; common migrant, very rare summer resident, (Knight). Washington; very rare, one specimen, (Boardman). York; common migrant, (Adams).

The first migrants arrive near Bangor about April sixteenth to the twentieth and for a few days the species is really common in the lower Penobscot Valley, associated often with the migrating hosts of Myrtle and Yellow Palm Warblers in the tops of the higher trees or in the roadside bushes less frequently found. By the last of April the host has gone, whither? Only a comparatively few remain to breed in the Penobscot Valley, seemingly having eggs in late May, and the extreme paucity of records from northern and eastern Maine shows that they do not summer there in any numbers. Captain Spinney reports the species as a common migrant at Seguin, but eastward from there records of its occurrence are also few.

Where do these hosts go to? In the fall the species is again common in migration in the Penobscot Valley, from late August to the very last of September, indicating that they come and go by a regular route to and from some breeding ground to us unknown. Again there seems to be a difference in the plumage of these migrating birds as compared with southern specimens, and it is evident that we have much yet to learn regarding them. Mr. Brown records the species near Portland from April eighteenth to the middle of October.

The song is a series of trilled notes or whistles which have been variously compared to those of the Chipping or Field Sparrow, though the birds I have heard resemble neither, which shows how bird songs and habits may vary in different regions. The chief song near Bangor is a "wee-chee-wee-chee-wee-chee-wee-chee" and a "chip" of alarm or concern.

The following extracts from the article by Mr. Swain in *The Journal of the Maine Ornithological Society*, 1906, p. 88, 89, will show as much regarding the habits in Maine as can be told at present.

"In early April this species enters the southern part of our State and soon becomes rather common along the coast and in the interior, wherever there are patches of pine trees, and through May and June I have found them quite common in

Knox, Lincoln and Waldo counties. Have observed them more or less abundant in Androscoggin, Oxford, Franklin, Somerset and Kennebec counties, and on their arrival they may be seen in the pine trees, in pairs and small flocks, busily gleaning for insects. The latter part of May they begin nest building. All the nests I have seen were placed well up near the top of a pine tree, horizontally and near the trunk of the tree. The nests are very difficult to locate, and one has to watch the birds carry nest material or food to the young. The nests are neatly and compactly built of strips of bark and weeds, a few roots and bits of dry oak leaves, lined with hairs and a few feathers. The nests I have examined were not as deep and cup-shaped as the nest of the Myrtle Warbler, but shaped more like the nest of the Magnolia Warbler.

Of the several nests I have seen, four eggs were the complement. They were placed from eighteen to twenty-five feet up. They were placed invariably in smallish pines, at the edge of the taller pines and deep woods, in an old clearing or opening on a side hill, where were interspersed a few small oak and some gray birch. Two nests I have examined were found in Livermore by Mr. Guy H. Briggs. One nest, with young, I found near Sheepscot Bridge, one in Jefferson, and two in Damariscotta. Have seen evidence of nesting near Camden, South Hope, Warren and Wiscasset. The eggs are dull whitish or grayish-white ground, well speckled and spotted with lilac-gray and burnt umber, and usually there is a wreath about the larger end. The eggs average about 0.68×0.52 .

This interesting, busy little Warbler gleans incessantly for insect food, catching them right and left, as he goes creeping in and out the boughs of the evergreen trees, much like that relative of his, the Black and White Warbler, occasionally uttering a clear little trill that is somewhat like the song of the Chipping Sparrow, yet easily distinguished from it. After the young are on the wing, they may be seen in little family groups, creeping eagerly for food, and from September fifth to

the first half of October they slowly wend their way to a warmer clime."

672a. *Dendroica palmarum hypochrysea* Ridgw. Yellow Palm Warbler; Yellow Red Poll Warbler; Twitch-tail Warbler.

Plumage of adult male: crown chestnut; back brownish olive green; rump brighter, more olive green; wings and tail clove brown, the feathers edged rather narrowly on outer edges with olive green; outer tail feathers with white spots on inner webs near tips; line over eye and eye ring yellow; below yellow, streaked with chestnut on the sides of the throat, the breast and the sides. Plumage of adult female: in general scarcely distinguishable from that of the male; the female has slightly less chestnut on the crown, averages a little browner and with less yellow but unless compared in a large series is practically indistinguishable from the male. Immature plumage: sepia brown or yellowish sepia brown above; crown without any chestnut or merely tinged with chestnut; rather obscurely streaked or washed below on the throat, breast and sides with dusky; in general very similar otherwise to the adults. Natal down, mouse color with a sepia tint. Wing 2.70; tail 2.05.

Geog. Dist.—Eastern North America, breeding locally from northern and eastern Maine, New Brunswick and Nova Scotia, northward east of Hudson Bay, the exact limit of range north unknown; migrating south through the eastern states and wintering from North Carolina to Louisiana and southern Florida.

County Records.—Androscoggin common migrant, (Johnson). Aroostook; locally common summer resident, breeding in bogs at Sherman, Crystal, Monticello, and in the Woolastook Valley, (Knight). Cumberland; common migrant, (Mead). Franklin; rare migrant, (Richards); seen only in fall, (Sweet). Hancock; very common migrant, locally found as a common summer resident on the bogs, (Knight). Kennebec; rare migrant, (Powers). Knox; transient, (Norton). Oxford; fairly common migrant, (Johnson). Penobscot; very common migrant, locally common summer resident, (Knight). Piscataquis; common migrant, (Knight); have found it quite common in a bog near Dover and am reasonably certain it breeds, (Ritchie). Sagadahoc; (Spratt). Somerset; common migrant, rare summer resident, (Morrell); breeding at Rowe Pond, early July, 1900, (Knight). Waldo; migrant and summer resident, (Knight). Washington; very abundant summer resident, (Boardman); common summer resident in the south-western sections on the various bogs and barrens, (Knight). York; vernal migrant, (Adams).

An account of my observation of this species which appeared in the Warbler, Vol. 2, No. 1, is reproduced here as giving all



NEST AND EGGS OF THE YELLOW PALM WARBLER.

From *The Warbler*, by the kindness of Hon. John Lewis Childs.

the information regarding the species which I possess up to date.

"The winter range of this species is chiefly included in the territory extending from Louisiana to northern Florida and eastern North Carolina. The spring migration begins in season so that the first individuals appear near Washington, D. C., in early April, and in Massachusetts about April fifteenth, while by early May the tide of migration has passed onward. The first individuals are seen in southern Maine at dates between April fifteenth and twentieth, while the average date of their first appearance on their breeding grounds near Bangor is April twenty-fourth, the earliest date seen April twenty-third and latest date of arrival May fourth. By the first to the second week of May migration is practically over in the United States, a majority having passed northward while a fair share of the migrating hosts have settled in their summer homes in suitable parts of the State of Maine. As an exceptionally late date for migration Capt. H. L. Spinney tells me he saw ten individuals of this species at Seguin Island, June 7, 1897. They have no chance to nest on this island.

Though one of the commonest and best known of the Warblers along the Atlantic seaboard during the migration, the breeding range of this species was for a long time vaguely known, and eggs of the species are and will continue to be especial desiderata in collections. Though vague hints that this bird had been found nesting in Maine have appeared in the years gone by, the first really authentic record of the actual taking of a set of their eggs was published by the writer in the *Oologist*, Feb., 1893, p. 14, and this set of five eggs was taken June 4, 1892. A nest with newly hatched young had been found in the same locality by a friend a few days before, on May 30. During the thirteen years which have elapsed, the sum total of nests of the Yellow Palm Warbler which I have found or seen found is nine in number, all being within a radius of seven miles of the city of Bangor. There are three

authentic records of nests being found at Pittsfield, Maine, and one record of a nest between Burnham and Unity, making a total of thirteen known instances of nests being found in Maine. A detailed record of these nests may be of interest, as they seem to be the only recorded ones from the United States.

Nests found in Bangor Bog, about six miles from Bangor: May 30, 1892, nest on ground in moss at foot of a small spruce, contained four newly hatched young; June 4, 1892, nest similarly situated containing four young with well developed plumage; also two nests in similar situations containing respectively five fresh eggs and five eggs incubation nearly complete. These nests were composed of fine dry sedges and grasses, lined with a few feathers and in the case of the one with the fresh eggs a few horsehairs were also present. The nests were all well concealed in the sphagnum moss which covered the surface of the bog and were at the foot of small bog spruces. The ground color of the five eggs in question was a peculiar roseate buffy white, fading to white when the eggs were blown. They were sparsely spotted with very fine markings toward the smaller ends while toward the larger ends the spots increased in size becoming blotch-like and tending to form a rather close wreath. The spots were lilac, brown and lavender colored and of varying or intergrading shades. The eggs measure 0.65 x 0.51, 0.65 x 0.50, 0.65 x 0.50, 0.67 x 0.50, 0.65 x 0.50 inches, which measurements agree very closely with those of other sets since found.

Nearly half of the nests of this species which I have seen were seen on this one day. No other nests were found, in spite of most diligent search, until June 2, 1894, when at the same locality I found a nest with four nearly fledged young and also a nest containing five quite fresh eggs. June 9, 1901, a nest containing nearly fledged young was found. The final nest for this bog was found June 22, 1905, at which time it contained two eggs and the number had not increased any on June 26th,

when I made a final visit to the locality and secured a number of photographs of the nest and its surroundings and collected the set for Mr. John Lewis Childs. This nest was abnormally situated, being on the interlocked limbs of three very stunted spruce shrubs which were growing in a clump, the distance of the nest from the mossy surface of the bog being about a foot. The nesting date was abnormally late for the species and the nesting site abnormal, as all nests previously found by me were imbedded in the moss. The nest was composed of fine grasses and sedges, lined with fine material which appears to be the fruiting stipes of some species of moss, and a few feathers. The diameter of the nest outside was four inches and inside across the top two inches; the height outside one and nine-tenths and the depth of cavity inside one and four-tenths inches.

On the twenty-second, during a pouring rain storm, I visited the bog for the purpose of procuring a quantity of the various species of orchids which grew profusely there, and on brushing by this clump of bushes out flew a bird which I gave a passing glance and pronounced (mentally) a young Yellow Palm Warbler just able to fly, having already seen a dozen of Yellow Palm Warblers with their broods scattered through the bog. For some reason or other I laid my box of flowers down near the spot whence the bird had flown, and proceeded to gather more flowers at other localities. Returning to the spot to get my box after the lapse of half an hour or more, I was much surprised to see the bird again appear from the same spot and alighting this time in a near at hand tree it uttered excited chippings which in Yellow Palm Warbler parlance is equivalent to saying "nest at hand." A diligent search of the surface of the moss around all the clump failed to reveal a nest, and when about to give up disgusted, a glance into the center of the clump of spruce revealed this abnormally situated nest.

I returned to the locality again the twenty-fifth, finding still only two eggs, and was afforded ample opportunity to observe

the parent bird engaged in incubating, seemingly oblivious to my presence. The next day I returned again with my camera in a pouring rain and made a number of exposures of the nest and its surroundings. It had been hoped that there would be opportunity to secure a view of the parent bird on the nest, but it was necessary to cut away some of the foliage in order to give an unobstructed chance to photograph the nest, and after such indignity the parent bird absolutely refused to return and be photographed, though previously to my disturbing the foliage I had been able to approach within a foot or two without driving the bird from the nest. The eggs measured 0.72×0.51 and 0.65×0.49 inches. The larger egg seemed to be marked rather typically though slightly larger in size than normal, the other egg was about average in size but the markings were much more distributed over the surface and the spottings heavier and more frequent on the smaller end portion of the egg than normal.

This makes a total of eight nests actually found in the Bangor Bog. The actual number of individuals of this species nesting there each season must be well up in the scores if not in the hundreds, as the bog in its entirety covers a space of several square miles, a large portion of which is suitable for the Yellow Palm Warblers to nest in and they are well distributed throughout the bog. A description of the locality seems advisable as it will be equally typical of hundreds of other similar spots in northern and eastern Maine where this species of Warbler has been observed during the summer, and must certainly breed. Perhaps I can best describe this bog by quoting from a previous article (Cf. Knight, *Contr. to Life Hist. Yellow Palm Warbler*, Jour. Me. Orn. Soc., Apr., 1904, p. 37):

"From the northeastern part of the City of Bangor a road, called Stillwater Avenue, runs from Bangor through Veazie and Orono to the town of Stillwater, some ten miles distant. At a point about half way to Stillwater, partly in Bangor,

partly in Veazie and partly in Orono, this bog is along both sides of Stillwater Avenue for a quarter of a mile. From Stillwater Avenue on the northwest side the bog extends three miles with various interruptions to Pushaw Pond and along the eastern side of the pond for nearly seven miles. Though thickly wooded or interspersed with alder swamps in limited spots, the vast bulk of this bog consists of large, open, boggy expanses thickly covered with a dense carpet of sphagnum moss and dotted with black spruce and hackmatack trees and various small shrubs. Among the characteristic vegetation may be enumerated: Hackmatack (*Larix laricina*); Swamp Spruce (*Picea brevifolia*); Labrador Tea (*Ledum groenlandicum*); Rhododendron (*Rhodora canadensis*); Low Birch (*Betula pumila*); Pitcher-plant (*Sarracenia purpurea*); Buckbean (*Menyanthes trifoliata*); Arethusa (*Arethusa bulbosa*); Calopogon (*Limodorum tuberosum*); Pogonia (*Pogonia ophioglossioides*); White-fringed Orchis (*Habenaria blephariglottis*); Cranberry (*Vaccinium oxycoccus*); Yellow Ladies' Slipper (*Cypripedium parviflorum*) and many other characteristic plants, largely sedges. Such is the region preferred by the Yellow Palm Warbler as a summer home, and in the open sunny spots where grow the orchids amidst scattered shrubs and trees you may seek their nests."

Nest building must begin early in May, as well grown young have been found the first of June. I am satisfied that both parents share in the duties of incubation and both take part in caring for the young. The nests can be easily located by watching the parents carrying food to the young, but before the eggs have hatched the birds are very shy of approaching the nest when observers are about. The incubating bird will remain on its nest until almost stepped upon before flying, and practically the only way of discovering nests is by flushing birds therefrom, unless some reckless person is willing to visit the bog and spend day after day during the nest building season, fighting the voracious mosquitoes and meanwhile watch-

ing to catch the birds in the act of carrying material to the nest.

On account of the comparative inaccessibility of the regions frequented by this species in the nesting season, and the many difficulties in the way of finding nests, eggs of this species will probably always be much sought for by collectors, even though the Yellow Palm Warbler is certainly one of the locally commonest of breeding species of Warbler in northern and eastern Maine, and may be most confidently sought in June in localities amidst such surroundings as I have outlined.

On June 1, 1902, Mr. J. Merton Swain, while in my company, found a nest with five much incubated eggs in a similar bog at Hermon, some five miles from Bangor. Mr. Swain also records a nest found June 11, 1902, between Burnham and Unity, which contained four young about a week old. This nest was in a tuft of grass in rather wet land.

The late C. H. Morrell took a nest near Pittsfield, May 27, 1891, (not recorded until some time after my first set was recorded) which contained two eggs of the Yellow Palm Warbler and two of the Cowbird. This nest was in a pasture on side of a knoll at the foot of a small fir bush. On June 25, 1893, Mr. Morrell took another set from a nest situated in a bushy pasture between two small bushes, which contained five eggs. June 13, 1894, Mr. H. H. Johnson took a set near Pittsfield which was placed five inches from the ground in a small spruce bush and which contained fresh eggs.

While the evidence shows that rarely nests are placed a slight distance from the earth in bushes, it is evident that a great majority of the nests are placed on the ground and imbedded in moss, and as those found in bushes at slight distances above the earth were found at late dates for eggs of the species, it is quite possible that such nests are second ones for the season, owing to the destruction of the first nest from some cause or other, which leads to seeking safety by placing the next nests built on more elevated sites.

While Maine is the only State where this species has been found nesting, I would be inclined to predict that careful search of suitable localities in northern New Hampshire and Vermont will show that they nest there also, and thence northward into Labrador and Newfoundland is their summer home. The southward migration begins as early as August, but stragglers remain in Maine through September and I have seen individuals about Bangor as late as October 1st.

The only sets which have been preserved in first class condition from the total number here recorded are the two sets in the collection of the late Mr. Morrell, one set of which I believe Mr. Morrell sent to the Smithsonian Institution previous to his death; the set in Mr. Johnson's collection; set in collection of O. W. Knight; set collected by O. W. Knight and now in collection of J. Parker Norris; set collected by O. W. Knight and now in the collection of John Lewis Childs; making a total of six sets from the United States and all from Maine, now preserved in first class shape.

In general during migration the species is often associated with the Myrtle as well as others of the earlier arriving Warblers occurring along the roadsides, hedgerows, in the orchards and more open woods. At such times it is common and very generally distributed throughout the State. Mr. Brown gives the season of its occurrence near Portland as from April fifteenth to twenty-fifth and again from September twentieth to November second. As a breeding bird it is typical of the Canadian fauna, and may be sought in practically every fair sized black spruce and hackmatack bog of northern and eastern Maine, less often breeding in the open bushy pastures and thickets.

The species is in general one of our commonest Warblers during migration, being readily identified by its bright chestnut crown, yellow breast which is streaked with dusky or rufous, its Flycatcher-like actions, and habit of constantly twitching its head and tail.

The food consists of beetles, grubs, larvae, flies, moths, butterflies, mosquitoes, gnats, worms and similar insects picked up in the air or on the foliage of trees and bushes. The species is also terrestrial in habits and very frequently indeed descends to the ground to feed and hop about or scratch in the moss or among the leaves. In late fall a certain amount of plant seeds (unidentifiable) are eaten. The song is a characteristic whistled or warbled "tsee tsee tsee tsee tsee tsee" or "peacie peacie peacie peacie peacie." Their call note is a mild "tsip," while their alarm call is a "chip" or "chick" uttered more sharply. The young leave the nest about twelve days after hatching. They are tended and fed by both parents. Nest building must begin ordinarily from the first to the middle of May. While the female is incubating the male sings from some near by tree or bush.

A nest with four eggs was found in the Bangor Bog by Mr. Durfee on May 30, 1908. A nest with five eggs found by Mr. Spaulding, one with four by Mr. Swain, and one in which the eggs and bird had been destroyed by some animal at Hermon by Mr. Cobb, all on the following day.

Genus SEIURUS Swainson.

674. *Seiurus aurocapillus* (Linn.). Oven-bird; Golden-crowned Thrush; Golden-crowned Wagtail Warbler; Golden-crowned Accentator.

Plumage of adult male: center of crown variously described as olive ochraceous, pale rufous or dull orange ochraceous by various writers; center of crown bordered on either side by black lines; wings and tail olive brown, edged with olive green; center of throat white; black streak each side of chin; breast and sides streaked with arrow-like streaks or spots of black; sides sometimes buffy tinged; rest of under parts white. Plumage of adult female: in general very similar to that of male and indistinguishable save that on the average the central crown patch may average slightly paler. Immature plumage: above fulvous brown, sparingly spotted with olive brown; the black lateral crown stripes only faintly indicated; below pale cinnamon, faintly spotted or streaked on sides of chin, the breast and sides with olive brown; this plumage is changed for the first winter plumage (very similar to that of adult,) in July. Wing 2.95; tail 2.12.

Geog. Dist. — Eastern North America, breeding from Kansas and Virginia to Alaska, Hudson Bay, and Newfoundland, south in the Alleghany Mountains to South Carolina, west to Colorado and Montana; rarely breeding in the northern Bahama Islands; accidental in British Columbia; wintering from Florida and the islands off the coast of Louisiana to southern Mexico, Central America and the West Indies.

County Records. — Androscoggin; common summer resident, (Johnson). Aroostook; common summer resident, (Knight); rather common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 110). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; quite common summer resident, (Powers). Knox; summer, (Rackliff). Oxford; common, breeds, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; very abundant summer resident, (Boardman). York; quite common summer resident, (Adams).

The species arrives from May sixth to the twelfth near Portland, according to Mr. Brown, and remains until October. At Bangor the date of arrival on the average is May fourteenth, sometimes a few days earlier, and the last day or so of September sees the departure of the stragglers. They are common and generally distributed throughout the entire State, and though most generally noticed during the song period of spring and early summer, they are nevertheless with us long after the oft called for "teacher" has seen the young out of the nest and taught them all worth knowing of bird life.

The song of the species cannot be better represented than in the oft quoted words of Mr. Burroughs, "Teacher, *teacher*, TEACHER, TEACHER, TEACHER." I have frequently heard this modified by individual birds to "Teacher, *teacher*, TEACHER, TEACH, TEACH, TEACH." In spring and early summer the males keep up this call by the hour, one answering the other, often while perched on a limb, but quite as frequently while on the ground. In general they are quite terrestrial in habits, rustling about on the ground among the dead leaves which they so closely resemble in color, and more generally feeding on the ground. I have, however, seen them feeding in the lower

limbs of trees and even taking insects in the air. Their alarm notes are "chick" or "chuck."

In the nesting season they frequent the woods, preferring woods not too dense overhead and with a fair amount of bushes with frequent open spaces beneath. I have found them most abundant in rather open hard woods of the more elevated character on gentle slopes near Bangor, but in other sections I have found them in open swampy woods or in open evergreen woods and so can only say that they are birds of the woodland. Where the *Trilliums*, *Arbutus*, *Cypripedium acaule*, *Cornus Canadensis* and similar plants grow, there you will find the Oven-bird. In some sections of the State they frequent the pine woods.

Of their domestic life I can tell but little, as they are secretive and not readily discovered while engaged in their family affairs. The nest is always placed on the ground and is generally roofed over, with entrance on the side, thus resembling an oven. A nest found May 30, 1894, was on the ground at the edge of a low piece of woods near a swamp. It was the typical roofed structure, composed of dried and partially skeletonized leaves and lined with grass. The diameter outside was five and a half and inside two and a half inches. The height outside was three inches, and the distance from bottom to top inside two inches. The five eggs measure 0.80 x 0.65, 0.81 x 0.64, 0.81 x 0.64, 0.85 x 0.62, 0.82 x 0.63.

Another nest found June 9, 1895, was at the foot of a small bush in rather swampy woods. This nest was abnormal in not being roofed over, and was composed of dry leaves, sedges and stems of fallen leaves, lined with leaves. It measures in depth one and a half outside by one inside, and in outside diameter three and a half and inside two inches. The eggs measure 0.80 x 0.60, 0.81 x 0.61, 0.79 x 0.60, 0.82 x 0.62, 0.81 x 0.60. Four or five eggs are usually laid, very rarely six. These are white and somewhat glossy, sometimes sparsely or heavily speckled over the entire surface, again wreathed or

more heavily marked about the larger ends with reddish brown and lilac gray. The male helps feed the young, and his frequent song by the time the young have hatched gradually dwindles away.

They feed on the various insects which they seek largely on the ground, eating beetles, worms, grubs, ants, and in general the forms of insects found in decaying leaves and about the ground. A habit of this species is to keep its tail wagging more or less constantly, which accounts for the name Wagtail.

Minot mentions a song uttered by the male at night while descending from his perch to the ground and describes it as a low, musical warble, but this I have never heard; see also under the next species for account of song.

675. *Seiurus noveboracensis* (Gmel.). Water Thrush; Small-billed Water Thrush; New York Accentator; Wag-tail Warbler; Northern Water Thrush; Water Wagtail.

Plumage of adults: above uniform olive brown; a buffy line over eye; below white, tinged with straw yellow and everywhere, even on the throat, streaked with black; flanks washed with olive brown. Immature plumage: deep olive brown, edged with cinnamon above; wings and tail darker; below yellow, streaked with clove brown; otherwise similar to adults. Wing 2.97; tail 2.12.

Geog. Dist.—Eastern North America, breeding from northern Illinois, the mountains of Pennsylvania and of Virginia and northern New England to Hudson Bay, Labrador and Newfoundland; wintering in the West Indies, Central and northern South America.

County Records.—Androscoggin; rare summer resident, (Call); not uncommon summer resident, (Swain). Aroostook; breeding at Fort Fairfield, (Batchelder, B. N. O. C., 7, p. 110); locally common about the ponds and lakes of the County, (Knight). Cumberland; quite rare, (Mead). Franklin; not uncommon summer resident, (Swain). Hancock; arriving August third, not seen in spring, latest date September twenty-first, (Mrs. W. H. Gardner); breeds about some of the ponds and lakes, (Knight). Kennebec; very rare summer resident, (Dill). Knox; transient, (Norton). Oxford; have observed it during the breeding season, (Swain). Penobscot; local summer resident, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; not common migrant, (Spinney). Somerset; common summer resident, (Morrell). Waldo; have observed it during the breeding season, (Swain). Washington; common summer resident, (Boardman).

The following account of the species is a reprint of the article written by Mr. Swain and published in the Journal of the Maine Ornithological Society for October, 1904, which is briefly supplemented by a few extracts from the observations of other persons.

"This extremely interesting, Thrush-like Warbler seems to be a migrant in the southern counties of the State, but in the counties of the Canadian fauna it occurs as a summer resident more or less common in some localities and seemingly scarce in others. I have observed it during the breeding season in Androscoggin, Franklin, Penobscot, Piscataquis, Kennebec, Oxford, Somerset and Waldo counties, while it is reported as breeding at Fort Fairfield in Aroostook County (Batchelder, Bull. Nutt. Oon. Club, VII, p. 110.)

It arrives in Maine from May 1st to May 10th, usually about the 10th to the 15th in the interior of the State. The first arrival in the spring, I find in Capt. Spinney's notes, was seen on May 15, 1901, on the lantern at Seguin Light. The first mention I find in the notes of the late Clarence H. Morrell of Pittsfield, was on May 14, 1894. I have not found it a common bird in Franklin County, at any time in the year, during the fifteen years I have observed birds in that county. I looked for it during spring migration for several years before it came to my notice. I did not see it until the spring of 1893, I was in Wilton in Franklin County, on the early morning of May 12. I was out on a swampy marsh bordering the shore of a small pond. Suddenly a bird perched upon a low willow bush and gave utterance to a very thrilling song. Knowing at once it to be a new bird to me, I trained my glass upon it as it perched in plain view, and soon saw it was a Water Thrush. On May 18, 1902, Mr. Brownson first saw it in Portland and I saw it the same year in Waterville on May 7, as will be seen in Mr. Sweet's tabulation of the migration report of that year.

Mr. George A. Boardman, in his list of the Birds of the St. Croix Valley, mentions this bird as "common-breeds."

It is an early fall migrant, in fact one of the earliest of our Warblers to begin its southern movement. I find the following dates of its appearance on the Seguin Island Light in Capt. Spinney's note-book. Sept. 19, 1893, Aug. 28 and Sept. 7, 1895. Aug. 5, 1896. Aug. 10 and 19, 1898, and in Mr. Morrell's notes: "Aug. 1, Water Thrushes are quite plenty along the shores of the pond." I have seen it in Kennebec County on Sept. 25th, while this last year the last bird I saw in Somerset County was on Aug. 29th.

It seems to be a fairly common nester in those counties in the Canadian fauna, though I have observed it more common in Somerset during the breeding season than in any other county. It is usually seen in May after its arrival about the shores of ponds and streams feeding on the ground, wagging its tail, a characteristic which readily helps to distinguish it from the Ovenbird, though occasionally it is seen some distance from the water. It is a beautiful singer. It has not the loud, decided notes of the Oven-bird, but is a more musical vocalist. It utters its song at frequent intervals, and once heard is not soon forgotten.

Mr. Fred B. Spaulding, of Lancaster, N. H., mentions this bird as nesting in his locality. I quote the following from our late fellow-member, Clarence H. Morrell's note book. "May 28, 1893, found a Water Thrush's nest with four eggs, which I left for more. May 29, got the Water Thrush's nest found yesterday. Nest was sunk in under hollowed-out side of an old rotten stump, around which grew several maple trees. The cavity was hollowed out in under the stump, so that the nest was completely covered over. The nest was not very large, but quite a thick structure of moss and leaves with a few weed-stalks. The lining was moss and grass and some red, hair-like moss-stems. The bird was on the nest and sat closely, not leaving the nest until I nearly touched her, and she stayed in the immediate vicinity as long as I was there, part of the time on the ground and part in the trees, always jilting her tail

at rapid intervals and uttering a sharp chirp. The nest was on a narrow strip of land with a pond on one side and the over-flowed marsh on the other. The nest contained but four eggs. Incubation fresh." This nest, Mr. Morrell told me, on one of our first trips up the pond, was the only one he ever located, though it was a fairly common nester about the pond. In June, 1900, Mr. Morrell and I made several trips up the pond near his home in Pittsfield, and one of the birds we particularly sought was the Water Thrush. Several pairs were seen about the shores of the pond and on the small islands in the pond. On June 9th, while near the locality he mentions finding the nest in '93, while photo'ing nests of Parula, Ovenbird, Red-winged Blackbird, Bronzed Grackle, Tree Swallows, and several others, I came upon a pair of anxious Water Thrushes. Watching the birds I thought to see them feed the young, which I presumed they had. I watched a long time but the birds were wary and had no idea of giving the nest-site away, so I began a search about the stumps and roots along the shore of the pond. While looking about the roots of a large rock maple stump, I discovered a nest with four young, evidently about two weeks old. When the parent birds saw me examining the nest they made a great deal of fuss about it. The nest was well concealed by being well hidden under a root of the stump and well covered over with weeds and ferns. It was placed about two rods back from the water's edge on dry ground. We got a photo of the nest and young. Soon after, I was looking about in a similar place, not many rods from the first nest, when I came across another nest at the base of a small clump of hemlocks, well concealed by the overhanging branches and weed-stalks that grew in abundance about the clump of bushes. This nest, too, contained four young, seemingly not more than a week old. Both these nests were made up of very similar material as that Mr. Morrell described in his notes as above.

The eggs are usually four in number, but sometimes five are laid, and with us they are usually laid about the last week in May. They are creamy white, speckled and spotted with hazel and lilac, and cinnamon-rufous, usually most heavily at the larger end, often forming a wreath about the larger end, and in size average about 0.78×0.56 . After the young leave the nest they feed about the shores of the ponds and in wet swampy places and in the latter part of August and early in September they begin their southern movement. While they are a bird with an attractive song, and in May they feed more or less about the foliage of trees for insect food, they are a bird not commonly seen by the new beginner, yet when one discovers the bird or has it pointed out, and once hears its bright and extremely pleasing song, it is an easy bird to distinguish about the shores of ponds or along the banks of rivers, as the frequent flit of its tail is a rather sure characteristic to distinguish it by. I have had no opportunity to examine the contents of its stomach, yet it feeds on some insect life found about the foliage of the trees near the water and feeds leisurely along the wet places in swamps along the shore, on water insects and some vegetable matter found in such places. It may be seen walking along at the water's edge, leisurely feeding, hopping up on a stick or stone, flitting its tail in a jerky manner, then resuming its search for food."

I would briefly supplement Mr. Swain's remarks by saying that where I have met with the species in the breeding season it has been invariably about the rather low wooded shores of various ponds and lakes in the Canadian faunal region of the State.

The song not distantly resembles that of the American Red-start, but there is in addition a so-called "passion song" which I have never heard but will quote from Mr. Jones' account, (*Warbler Songs*, pp. 43-44.) He writes: — "The ordinary song is, to my ear, a series of double syllabled, clear, ringing whistles, followed by a soliloquizing twitter. It is a

thrilling burst that is startling and wild. The proper accompaniment is a wild, wooded glen in which a stream tumbles over its rocky bed. Like the Water Thrush, this species has two song periods, the first closing late in June or early July, the second beginning in early August.

I have heard the passion song in August, also. The passion song of the Water Thrushes are so much alike that a description of one will serve for all. There is in each the same ringing ecstasy of joy. The song seems to swing once round a great circle with incredible swiftness but perfect ease, ending in a bubbling diminuendo as the performer lightly touches the perch or ground with half rigid wings held high. The song is a flight song, usually occupying less than half a minute, but packed with the intense life of a bird. I have seen the Oven-bird suddenly vault into the air, mounting to the tree tops on quivering wings, then dart back and forth in a zigzag course swift as an arrow, and finally burst into a song as he floated gently down. There is some difference in the passion songs of the three species, which seems to be in the use of some notes of the ordinary song at the close, rarely at the beginning. Sometimes the Oven-bird closes his passion song with a burst of perfect call song. It seems hardly fair to say that the songs of the Water Thrushes are Thrush-like, since there is almost nothing of the true Thrush timbre to their songs. On the contrary, a careful analysis discloses, rather, a true Warbler timbre, obscured as it is." (Jones).

A nest found by the author June 23, 1908, contained three eggs, incubation about seven days advanced. This nest was composed of moss, lichens and fine roots, and was situated in the mossy, upturned roots of a tree about two feet from the ground in dense, swampy woods beside a brook where the author was fishing.

676. *Seiurus motacilla* (Vieill.). Louisiana Water Thrush; Large-billed Water Thrush; Large-billed Wagtail Warbler.

Plumage of adults: upper parts deep olive brown, darker on crown; prominent white line over eye; below white, tinged with buffy, and washed with buffy on sides of throat and flanks; streaked with black below except on throat and middle of belly. Immature plumage: very similar but feathers above browner, the wing coverts tipped with dull rusty; streaks below fainter and more olive brown. Wing 3.20; tail 2.14.

Geog. Dist.—Eastern United States, breeding north to Minnesota and Connecticut, southern Ontario, southern Michigan and southern Minnesota; wintering in West Indies, southern Mexico and Central America.

County Records.—Oxford; one taken at Norway in 1865 by Irving Frost, (Stearns, N. E. B. L., p. 159).

There remains only this one record to substantiate the occurrence of this species as an accidental visitor to Maine, the record near Waterville by Prof. Hamlin being withdrawn, (Chadbourne, Auk 3, p. 278). This species is unknown to me. Mr. Minot states that its habits are very similar to those of the ordinary Water Thrush, it being equally fond of woodlands in the neighborhood of water in which it wades and jerks its tail much like the related species.

A set of eggs in my collection was taken by Judge J. N. Clark at Old Saybrook, Connecticut, May 15, 1883. The nest is described as built into the side of a mass of roots and mud turned up by a maple tree which had blown over in a swamp beside a brook. He adds "This is the third year I have taken a set from the same nest," so it is evident that the species sometimes if not always resorts to the same locality or nesting site. The nest is described as composed of old wet leaves, lined with grass and hair. The nest contained five eggs of this species and two eggs of the Cowbird, which latter had seemingly been laid by the same individual bird. The Water Thrush's eggs measure 0.84 x 0.65, 0.80 x 0.61, 0.81 x 0.64, 0.79 x 0.63, 0.82 x 0.65 and the Cowbird's eggs measure 0.84 x 0.65, 0.86 x 0.65. The eggs are white, rather evenly speckled all over with chestnut and lilac gray, but with a tendency for the markings to be heavier about the larger ends. Other types of eggs are said to be boldly blotched, rather than speckled. Four to seven, but more generally five eggs are laid.

Genus GEOTHLYPIS Cabanis.

Subgenus OPORORNIS Baird.

678. *Geothlypis agilis* (Wils.). Connecticut Warbler.

Plumage of adult male: above brownish olive green; head, neck and breast bluish gray, or crown tipped with olive green in fall; white eye ring; sides washed with pale olive brown; belly yellow. Plumage of adult female: very similar to that of male but in general never as gray as the adult male plumage, the bluish gray portions being tipped with olive green. Immature plumage: probably very similar. Wing 2.95; tail 1.95.

Geog. Dist. — Eastern North America, said to breed in Wisconsin, Minnesota, Manitoba and Ontario, but breeding range as yet not well defined; probably wintering in northern South America.

County Records. — Cumberland; one taken at Cape Elizabeth, August 30, 1878, (Brown, C. B. P. p. 9); one taken at Westbrook, a young female, September 5, 1901, (Norton, J. M. O. S. 1904, p. 47); one taken at Westbrook, September 20, 1896, (Norton); several seen in the woods at Cape Elizabeth, in the latter part of September, 1906, and a young male brought in by a cat, September 17, 1906, (Brownson, J. M. O. S. 1906, p. 106). York; one at Saco in September, 1885, one September 8 and another September 15, 1886, (Goodale, Auk 4, p. 77); an immature specimen taken at Eliot, September 12, 1894, is in my collection, (A. H. Howell).

Our present knowledge of this species is limited but we are safe in saying that it is one of the rarest of North American Warblers. The extremes of its occurrence are August thirtieth and September twentieth, or in other words it occurs chiefly in the month of September, very rarely then, and confined, as far as the records show, in Maine to Cumberland and York counties, indicating a migration route along the coast.

The historic nest cited in connection with this species was taken near Carberry, Manitoba, June 21, 1883, by Ernest S. Thompson, and both parent birds with the nest and eggs are in the National Museum. The nest is described as being composed of dry grass and sunken level with the surface in the top of a low mossy mound. The eggs were four in number and stated to measure 0.75 x 0.56. Before being blown they are described as delicate creamy white, with a few spots of lilac, purple, brown and black, inclined to form a ring at the larger end. (Auk 1, pp. 192-193).

Davie describes a set taken at Listowel, Ontario, June 7, 1895. The nest was placed in a cluster of raspberry vines in hardwood timber. The nest is composed of shreds of leaves, fibers of bark, grass, rootlets and hair. The eggs measure 0.79×0.56 , 0.81×0.57 , 0.81×0.56 , 0.80×0.57 . These eggs are described as being similar to Mr. Thompson's set save that in two of the eggs the markings are sparingly distributed over the surface as well as at the larger end and in one specimen the markings are fine and pretty evenly distributed throughout. (Davie, N. & E. N. A. B., Ed. 5, p. 450).

Mr. Thompson describes the song as "beechee-beechee-beechee-beechee" or another type as "fruchapple fru-chapple fru-chapple whoit." (P. U. S. N. M. 13, p. 621-622). In Warbler Songs, p. 49, the following are ascribed to this species:—"wheat-a; wheat-a; wheat;" "wheat, our winter wheat;" "chip-che-a-wee; chip-che-a-wee; chip-chee-a-wee;" "wheat, winter wheat, winter wheat, winter wheat;" "wheat here;" "wheat;" "wheat-it-ta, wheat-it-ta, wheat." In habits the species is said to be largely terrestrial, seeking much of the food on the ground, and seldom save in migration being found in the trees. The call is a "chip" or a "chuck."

Subgenus GEOTHYLPIS Cabanis.

679. *Geothlypis philadelphia* (Wils.). Mourning Warbler.

Plumage of adult male: lower throat or upper breast black; head, neck and upper throat or chin bluish gray; upper parts olive green; belly yellow. Plumage of female and immature: very similar to male but chin and throat whitish or tinged with yellow and no black on throat; upper parts olive green. Wing 2.50; tail 2.10.

Geog. Dist.—Breeding in Michigan, central Ontario, northern New York, Vermont, New Hampshire, mountains of Berkshire Co., Massachusetts, mountains of Pennsylvania and West Virginia, northern Minnesota and the Valley of Red River of the North in North Dakota and Manitoba, Maine, New Brunswick, Prince Edward Island, Nova Scotia and eastern Assiniboia; wintering in the mountains of Costa Rica, Colombia, Ecuador, etc.

County Records.—Aroostook; common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 110). Cumberland; rare, (Mead). Franklin; rare summer resident,

(Swain). Kennebec; seen at Winslow in 1901 under conditions that suggested it was breeding, (Swain, J. M. O. S. 1901, p. 29). Oxford; occurs at Upton, (Brewster, B. N. O. C. 3, p. 61). Sagadahoc; not uncommon migrant, (Spinney). Somerset; seen near Hartland under conditions that suggested it was breeding, (Swain, l. c.). Washington; very rare, Boardman).

May sixteenth seems to be the earliest date the species has been reported in the State in spring, while records for about May twenty-fourth, thirtieth and thirty-first rather predominate. Fall records seem lacking but a date when it was last seen at Cambridge, Massachusetts, September thirtieth, will help to supply the approximate time of departure from Maine. The species is unknown to me and what is here written is a compilation of the not too abundant notes of others. Minot states that it frequents the haunts of the Maryland Yellow-throat, and is also seen examining the foliage of tall trees sometimes. He states they find their summer homes in copses and thickets in open spots, finding their food in piles of brush, on the ground, etc. Their song he states is a warbled liquid song, likened to that of the House Wren, Water Thrush and Maryland Yellow-throat, and is generally delivered from a high perch. In Warbler Songs, p. 45, we find the following: The song heard most frequently is "tee te-o te-ote-o we-se," while another variation is "true true true true too." The calls are said to be a "chip and a tsip." In Birds of Connecticut, p. 24, the males are said to have a very characteristic habit of perching at frequent intervals during the day on some branch, generally a dead one, commonly ten or fifteen feet from the ground, and singing for half an hour at a time, (Merriam).

About the most complete account of the nesting and other habits of this species available is an article by Mr. J. Merton Swain which was originally printed in The Journal of the Maine Ornithological Society for March, 1905, pp. 14-18, and which is here produced. Mr. Swain writes:—

"The Mourning Warbler seems to be one of the least known of this interesting family that breed in our State. The records

of its occurrence seem to be few. It seems to be transient in the southern counties of our State, and a rare summer resident in the counties of the Canadian fauna. Boardman gives it in his list of the "Birds of the St. Croix Valley" as "very rare." It is reported "common" at Fort Fairfield, Aroostook County, (Batchelder, Bull. Nutt. Orn. Club, Vol. 7, p. 110), and is reported as occurring at Upton by Mr. Wm. Brewster. I find no mention of it in the late Clarence H. Morrell's notes at Pittsfield."

It seems to somewhat resemble its near relative, *Geothlypis trichas brachidactyla* (Swain.) in its choice of feeding grounds and in its choice of location for its summer home. It is one of the late arrivals in the State, in fact one of the latest of this family to arrive, reaching the interior at about the time the Blackpolls arrive. Soon after its arrival it may be observed, but a pair in a place, feeding about the dense underbrush on the margin of some lowland woods or second growth swamp, or on some side hill, covered with brush, near a deep wooded ravine, and soon after its arrival it begins its nest building. The migration report for 1902 shows that it was first observed near Waterville on May twenty-fourth and at Avon, Franklin County, on May twenty-fourth, (J. M. O. S. Vol. 6, No. 3, p. 80). I find no records of its nest being found in the State.

Mr. Fred B. Spaulding, of Lancaster, N. H., has found it breeding near his home. He writes me as follows:—"It was not until June 8, 1901, that I found the nest of the Mourning Warbler. On that date, in company with my old friend, Judge Clark, of Saybrook, Ct., we were searching a hillside, near a small trickling stream, when I discovered a nest, new to us both, containing five fresh eggs. The nest was supported by some leaning raspberry bushes, sixteen inches from the ground. No bird was on the nest when I discovered it, but on our retiring a short distance she returned. At our approach she slipped from the nest and ran off through the vines and

bushes like a mouse, repeating this act as often as we gave her the opportunity. After trying in vain to get a good look at the bird through a glass, and being unable to identify it, we collected the bird and found it to be a female Mourning Warbler. The nest was large and compact. On the bottom were quite a few dead leaves, interwoven with coarse straw; inside of these a lot of finer stems, and lined with dark rootlets and a very few hairs. Neither the nest nor the eggs were at all similar to the Maryland Yellow-throats, which I fancied they would resemble. Since that I have found no nests, but I find the birds in similar localities each year, on hillsides overgrown with raspberry bushes, facing woods at a short distance."

I first identified this interesting species in Farmington, about fifteen years ago. I saw it and heard it singing on a hillside, near a small stream, the latter part of May, and have usually seen one or more each spring since. It has a rich gurgling song, and when once it becomes fixed in one's ear it is not to be forgotten, and not likely to be confounded with the song of any of its relatives. For a description of its song I can do no better than to quote from Chapman's hand book:—"Its common song consists of a simple, clear, warbling whistle, resembling the syllables "trué, trué, trué, tru, too, the voice rising on the first three syllables and falling on the last two."

During the nesting season he has a habit of perching at frequent intervals on some branch, usually a dead one, and singing for fifteen or twenty minutes, then very suddenly he takes a rapid descent to the thicket near by, where doubtless his mate is sitting on the nest. On June 12, 1894, at Farmington, I observed a male singing on a perch near a raspberry thicket, on a hillside sloping up from a small stream, but though I spent several mornings trying to locate the nest I was not able to do so. I saw a pair evidently nest-building near Winslow, (Kennebec County) the last days of May, 1901, but lack of time prevented me from locating the nest, though I had it marked to a certain hillside not far from the Kennebec

River. The next year I saw a pair near the same ravine, and also a pair evidently engaged in rearing their young between Athens and Hartland in Somerset County. The same year, in June, I heard the song of this Warbler on a hillside in Farmington, and located the nest which I presume was of this species, but, try as I might, the female would slip from the nest and glide, mouse-like, from my view and remain hidden, so that with the limited time I had to remain I was not able to identify the owner. This nest was placed in a dense growth of raspberry bushes, weeds and ferns, in an old cutting, which was well grown up to clumps of underbrush of maple, beech, birch, hemlock and spruce. It was situated about six inches from the ground, in a clump of vines, made up of very similar material as the nest previously described by Mr. Spaulding, and contained four incubated eggs. They somewhat resemble the eggs of the Yellow-throat.

On June 10, 1903, while driving from Athens to Hartland, in Somerset County, I saw a male Mourning Warbler perched on a limb of a tree, the same tree in which I had seen him in the trip two weeks before. I drove my horse to a house near by and left him and returned to look for the nest. I again saw the male and heard his pleasing song. The locality was a typical place for this Warbler to be nesting. After much search through the underbrush and old raspberry vines, I located the nest with four eggs in it. The female was on the nest as I approached, and skulked off near the ground, only giving me opportunity to catch a glance at her. I marked the place carefully, and retired some distance from the place and waited for her to return to the nest. After a considerable time I stealthily approached the nest and placed my hat over it and female, thus positively establishing her identity.

The nest was quite a bulky affair and placed at the base of a clump of coarse weed stocks about six inches from the ground. The outer nest was of dry leaves and vine stalks. The nest proper was made up with a thick outer wall of dead, coarse,

flat-bladed grass, with finer grasses and a few weed stalks, and all through this outer wall was interwoven a few small, dead, white maple leaves. The inner wall was composed of fine grasses, and the inner lining contained a few horsehairs. It was a very neat, compact nest, well built to protect the eggs from the dampness from the moist ground where it was placed. It measured, outside diameter, five inches; inside diameter, two inches; outside depth, three and one-half inches; inside depth, two inches.

The eggs, four in number, were fresh. The general color was white with a rosy blush, dotted with reddish brown spots, most thickly sprinkled about the larger end, and does not much resemble the average set of Yellow-throat's eggs, and measured 0.71×0.54 , 0.70×0.54 , 0.71×0.54 , 0.71×0.53 .

The last days of June, 1904, I saw a pair of Mourning Warblers feeding young on a side hill near a ravine in Winslow, not far from the Kennebec River.

Mr. Dana Sweet, of Avon, Franklin County, sends me the following from his note book: "May 24, 1902, saw a Mourning Warbler about three miles west of my home, on low land near the Sandy River. May 24, 1903, went to the above locality and saw a Mourning Warbler singing on the limb of a tree. June 17, heard its song near the same locality. June 2 and 4, 1904, I heard one or two Mourning Warblers near Tim Brook, in Eustis." This Warbler doubtless breeds rarely in Mr. Sweet's locality.

This Warbler seems to stay about near the locality after the young leave the nest——."(Swain).

681d. *Geothlypis trichas brachidactyla* (Swain.). Northern Yellow-throat.

Plumage of adult male: broad black band across forehead, bordered at back with ashy; the lores, orbital ring and auriculars black, giving the appearance of a black mask, bordered by ashy; above olive green; throat and breast yellow; sides washed with brownish; belly whitish; under tail coverts yellow; in fall the black portions are tipped with grayish, the belly

is yellower and the sides browner. Plumage of adult female and immature: no black on head; above olive green; throat and breast yellowish; belly white or whitish; sides brownish; under tail coverts yellow; immature males have the black mask more or less indicated. Wing 2.15; tail 2.00.

Geog. Dist.—Breeding from eastern Texas and eastern North Dakota to the Alleghany mountains, in the whole of the Mississippi Valley, north to Alberta and Athabaska, and from northern New York, east of the Alleghany Mountains and northern New Jersey to southern Labrador and Newfoundland; wintering in the Bahamas, Cuba, Jamaica, Louisiana to eastern Texas, and in Mexico, Guatemala, Nicaragua and Costa Rica.

County Records.—Androscoggin; common summer resident, (Johnson). Arostook; common summer resident, (Knight); common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 110). Cumberland; common summer resident, (Brown, C. B. P. p. 10). Franklin; common summer resident, (Swain). Hancock; common summer resident, noted on Deer Island, (Knight). Kennebec; quite common summer resident, (Powers). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; common summer resident, (Adams).

Mr. Brown has given the date of arrival near Portland as about May tenth and the departure about October twenty-second, which latter date is unusually late, I should judge, for the last straggler. Near Bangor the species is usually seen about May fifteenth and remains very exceptionally as late as September twenty-fifth. The species is common throughout the State in proper localities, frequenting during migration the trees and bushes to quite an extent.

In the breeding season they are found in the meadows, cat-tail bogs, bushy bordered streams and ponds, wet bushy pastures and in general similar situations, no matter how limited in extent, which afford moist, sunny, grassy or sedgy, bushy localities. When nesting they are inclined to sneak through the reeds and sedges, hopping from bush to bush, and peering out at the intruder from the different points of view so obtained and uttering frequently a rather harsh "chick" or a rasping, chattering "ratter ratter ratter" or occasionally a "chit." The male sings frequently in the spring and early summer, his

favorite song to me always sounding like "peachity, peachity, peachity." Other observers render it however as "wichity, wichity, witchity" or "wee-che-te, wee-chee-te, wee-che-te." Minot gives the song as "wee-chee-chee," repeated several times with a marked emphasis on the "wee." Davie renders it as "tackle me! tackle me! tackle me!"

The nest is always situated low down, often on the ground on a mossy hummock or imbedded in the moss, but in many localities they nest fully as frequently a few inches from the ground (four to ten) placing the nests in tussocks of sedges, cattails or rushes, or even in low bushes, always in the swampy localities frequented by them. The nests are rather neat baskets of sedges and grasses, sometimes roofed, more often not, sometimes lined with hair, again with fine grasses and sedges, and they are always well concealed, generally found only by flushing the female.

A nest found, June 5, 1898, was in a little tussock of *Ledum grænlanticum* (Labrador Tea), supported on the lower branches and imbedded in the sphagnum moss which reached nearly to the top of the nest. This nest was composed of dry ferns and sedges, lined with fine sedges. It is two and a quarter inches in depth outside by one inside, while the diameter outside is two and a half and inside one and three-quarters inches. The eggs measure 0.78×0.55 , 0.75×0.55 , 0.72×0.54 , 0.63×0.47 . The smallest egg is abnormal, being a decided runt, but it nevertheless seemed fertile. The ground color of the eggs is clear white, more seldom creamy white, and they are speckled about the larger end with reddish brown, umber and black. Some eggs are lined or scrawled with black, others occasionally have suffused markings of lilac gray. In general the spots are very few, small and scattered save for those gathered in a rather close ring about the larger ends. The first two weeks in June seem the more general time for eggs to be laid, dates varying from May twenty-eighth to June twelfth.

The male takes an interest in family affairs to the extent of

being around in the vicinity ready to utter his protests if an intruder appears. I have never however known the male to help in building the nest, though he is near to the female most of the time she is working or gathering material, neither have I ever caught the male incubating. He works faithfully however in feeding the young.

Nest building requires a week to ten days and an egg is laid each day until the set of three to five eggs is completed. Incubation requires twelve days, occasionally slightly longer in cold, wet weather. The young leave the nest in fourteen to fifteen days.

The food consists largely of beetles, grubs, larvæ, the smooth green larvæ of various Satyrid butterflies, flies, ants, and in general the various sorts of small insects found in the haunts of these birds.

Genus ICTERIA Vieillot.

683. *Icteria virens* (Linn.). Yellow-breasted Chat.

Plumage of adult male: above olive green; white line from eye to bill, another on side of throat, and also eye ring same color; sides washed with olive brown; throat, breast and upper belly bright yellow; lower belly white. Plumage of adult female: in general very similar to male, but lores generally dusky and yellow lower parts paler. Immature plumage: grayish olive brown above, the wings and tail edged with dull olive green; below ashy gray, washed with olive gray on sides; otherwise quite similar. Wing 3.00; tail 3.02.

Geog. Dist.—Breeding from the southern portions of New England, New York, Michigan, Wisconsin, and South Dakota, southward to eastern Texas, east to the Atlantic coast; wintering along the coast and in the lower portions of Tabasco, Campeche, Yucatan, Chiapas and from Yucatan over Guatemala, chiefly below 4,000 feet elevation.

County Records.—Cumberland; a male was taken at North Bridgton, June 6, 1880, by J. C. Mead, (L. B. Me. p. 120); the mangled remains of a small bird found on the lawn of Mrs. William Senter of Portland in the autumn of 1893 were shown me and proved to be the relics of a Yellow-breasted Chat, (Brown, Auk 11, p. 331). York; a specimen was taken at Eliot, (Smith, L. B. Me., F. & S.).

This species is a mere straggler to the State and I have never met with it in life, either here or elsewhere. Other

observers state that it is a bird of bushy thickets and clearings. During the mating season they are said to perform various antics in the air, especially at night, and, while thus engaged as well as at other times they utter a variety of sounds such as musical whistles, noises like the barking of young puppies, mewling of cats, etc. In Warbler Songs, page 41, the song is described as ventriloquial to a marked degree. Part of the song is worded as follows;—"cop! chick! cock! chack! co-co-co-co-co-." The range of imitation is said to embrace snatches from nearly every voice of the woodland. The so-called flight song, is compared to the broken wing tactics of other birds, a medley of every sort of bird voice uttered from the air. Generally when singing the ordinary song the bird is said to be concealed in some small tree or thicket. It is said to sing at all hours of the night.

The nest is said to be usually placed in bushes and brambles from near the ground to not over five feet up as a rule, but one nest recorded in Davie, Ed. 5, p. 453, was said to have been in a "Wren box" attached to one of the pillars of a piazza, which is of course unusual for the species. A nest in my collection was taken for me in Greene County, Pennsylvania, May 21, 1895. This nest was composed of leaves, bark strips, and vine-like plant stems, lined with fine tendrils and rootlets. It was placed between briars in a briar clump, about one foot from the ground in a neglected field on a hillside. The nest is three and eight-tenths inches deep outside by two and one-tenth inside, while the outside diameter is five and the inside three inches. The eggs measure 0.85×0.66 , 0.86×0.66 , 0.91×0.66 , 0.88×0.65 .

In general eggs are usually white and glossy, sometimes pinkish or greenish tinged, sometimes finely and evenly marked over the entire surface, generally with heavier markings about the larger end also, and sometimes with the marks wreathed or confined to the larger end. The color of the markings is reddish brown, chestnut or slightly grayish. Three to five eggs are laid.

Genus WILSONIA Bonaparte.

684. *Wilsonia mitrata* (Gmel.). Hooded Warbler.

Plumage of adult male: crown, occiput, sides of neck, whole throat and part of chin black; forehead, sides of head, front of chin, breast and belly rich yellow; above, back and sides bright olive green; inner web of outer tail feathers mostly white. Plumage of immature male: very similar but with the black feathers tipped with yellow. Plumage of adult female: the black on head and breast in general more restricted; otherwise very similar to male. Plumage of immature female; uniform olive green above and lemon yellow below, the black lacking or only slightly indicated. Wing 2.65; tail 2.35. Bill with bristles at base.

Geog. Dist.—Eastern United States, breeding rarely to eastern Kansas, southeastern Nebraska, southeastern Wisconsin, central Michigan, southern Ontario and Massachusetts, breeding rather commonly from Illinois to the Atlantic coast south to Florida; wintering in Yucatan, Guatemala, the northern coast of Middle America from Vera Cruz to Panama, etc.

County Records.—Cumberland; an adult male was taken at Falmouth, September 10, 1904, by S. T. Dana and is now in the Bowdoin College collection, (Brownson, Auk 1905, p. 85).

This is another straggler from its normal home, being only once found in Maine. Regarding its habits I must again quote entirely from the observations of others. It is said to nest both in swamps and on hillsides chiefly in bunches of *Kalmia latifolia* (Mountain Laurel,) (Minot's Land and Game Birds of New England, p. 132, Ed. 2, foot note by W. B.). In Davie's Nests and Eggs, Ed. 5, p. 454, the species is said to be one of the liveliest of its tribe, being active in catching insects on the wing. It is said to frequent thickets and undergrowth of high and low land, concealing itself when pursued. I quote the following representation of its songs as given in Warbler Songs, pp. 28-29:—"che-weo-tsip, che-we-eo" (Mrs. Wright;) "You must come to the woods or you won't see me" (Chapman;) "chee-ree-cheree, chi-di-ee;" "whe-ree-whee-ree-eeh" (Langille.). There seems to be a first song period lasting to late June and another in late August. The male is said to have the same habit of opening and closing its tail as the Redstart.

A nest and eggs in my collection were taken with the female

parent at Gaines, Orleans Co., New York, June 2, 1896, and recorded at the time by, I think Mr. Short in the Oologist, since which I acquired the set by purchase from Mr. Short. The nest is composed externally of narrow strips of pellucid bark and a few sedges, lined with fine grass and hair. It is two inches deep outside by one and a half inside, while the diameter is three and a half outside by one and three-quarters inches inside. The eggs are white speckled with chestnut, umber and lilac gray, tending to form a wreath about the larger ends to which the marks are chiefly confined. One egg is almost entirely marked with suffused lilac gray about the larger end while the others are strongly and boldly marked. They measure 0.68×0.53 , 0.66×0.51 , 0.65×0.53 . The ever ready Cowbird had added one of its own eggs to this set and the intruder's egg measures 0.96×0.60 . Generally four or five eggs are said to be laid.

685. *Wilsonia pusilla* (Wils.). Wilson's Warbler; Wilson's Black-cap; Green Black-capped Flycatching Warbler.

Plumage of adults: crown black; forehead yellow; otherwise above bright olive green; below bright yellow; the adult breeding female often has fully as much black in the crown patch as the adult male does and in many cases the two sexes are not distinguishable in plumage, other writers to the contrary notwithstanding. Immature plumage: very similar indeed, but the black cap is lacking or sometimes indicated by a few black feathers, edged with greenish olive. Juvenal plumage: above hair brown, mottled with sepia; wings and tail olive brown, edged with greenish; below yellow, washed with pale brown on throat and sides. Wing 2.25; tail 2.10. Bill with bristles at base.

Geog. Dist.—The breeding range extends from northern Maine and northern Minnesota to Lake Athabaska, Labrador, Hudson Bay and Newfoundland, being essentially a bird of the Canadian and Hudsonian faunæ; wintering on the Atlantic slope of the mountains of Central America from Guatemala to Costa Rica, occasionally wintering as far north as Yucatan.

County Records.—Androscoggin; sometimes rear their young in this county, (Walter, B. A. Co. p. 9). Aroostook; breeds at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 110); breeds at Sherman, Crystal and in the Woolastook Valley, (Knight). Cumberland; uncommon transient, (Brown, C. B. P. p. 9); have record of its occurrence at Westbrook, September 11, 1895, (Norton).

Franklin; rare migrant, (Swain). Hancock; occurs regularly in small numbers in spring, the fall visits are not as regular, (Mrs. W. H. Gardner); breeds locally on many of the bogs, (Knight). Kennebec; (Robbins). Penobscot; not as rare as has been supposed, a very local summer resident, breeding near Hermon, Bangor, and elsewhere in the county, (Knight). Piscataquis; rare summer resident, (Whitman). Sagadahoc; not uncommon migrant, (Spinney). Somerset; rare summer resident, (Morrell). Waldo; summer resident, (Knight). Washington; not common summer resident, (Boardman); quite common during migration from May 11 to 24, (Clark).

In migration Mr. Brown found the species near Portland from May tenth to the thirty-first and again about August twenty-fifth. Mr. Norton's record near Westbrook of September eleventh seems to be the latest fall record. That the species breeds frequently in the Canadian life areas of northern and central Maine seems well established, and that it has not been more often discovered during the nesting season is on account of the favorite habitats being rarely visited by ornithologists. Full sets of eggs may be sought between June first and June nineteenth. There seems to be no doubt at all that a person acquainted with the habits of the present species and the Yellow Palm Warbler as well, can go into territory in northern and central Maine and find both species in many localities where other observers have failed to see them, provided that suitable tracts of spruce and hackmatack bog exist in the region. The following account of its nesting, written by Mr. Swain, is taken from the *Journal of the Maine Ornithological Society* for July, 1904.

"This is one of our rarest Warblers known to nest in eastern North America. In some localities in the State it is more or less common during the spring migration. Yet the bulk of these birds go to the northward to breed, and migrate south to Eastern Mexico and Central America. They are seen usually in pairs during the migration period, usually in knolly, bushy pastures, usually near the water. They arrive here about the second week in May. The males are in full song when they arrive and usually commence nest building very soon after their arrival."

The first record of its nesting I am able to find a description of was taken by our late fellow worker, Clarence H. Morrell, at Pittsfield, although reference to its nesting in the State is made in Walter's "Birds of Androscoggin County," page 9, and Batchelder, Bull. Nutt. Orn. Club, Vol. 7, p. 110. Mr. Morrell found two nests of this bird, one on June 12th, 1892, the other June 4th, 1897. For these descriptions I can do no better than to quote his notes published in *The Osprey*, Sept., '99, page 5, (although his sister, Miss Ethel B. Morrell, has kindly given me access to her brother's copious notes at any time).

"Wilson's Warbler may be safely classed as one of the rarest Warblers which breed regularly in this State. It is nowhere common, even as a migrant, arriving during the second week in May with the main army of migrating Warblers. I always see it singly or in pairs, never in flocks, at this time. They are birds of the bush, never going into large woods as do the Black-throated Green and Blackburnian Warblers, but spend the summer in knolly, bush-grown pastures bordering young growths. The males are in full song when they arrive, and not much time is spent before nest-building commences. The nest is placed under a tuft of grass, or at the base of a shrub, and so well concealed that it is seldom found, unless by accident. If two nests are sufficient data to warrant conclusions, it would seem that they differ principally from those of other ground-building Warblers in the simplicity of material used and in their small size.

A nest found June 12, 1892, was placed at the base of a small shrub, and was mainly constructed of short pieces of grass, fairly well woven together, with a very few hairs mingled with the grass lining, and some moss and leaves exteriorly. This nest contained four nearly fresh eggs, and measured as follows: Outside top diameter 3.00 x 3.50 inches; inside top diameter 1.75, inside depth 1.25.

A second nest found June 4th, 1897, was in the side of a

depression in the ground, well concealed by overhanging grass and shrubs. It was constructed like the first one, with the exception of the hair, in the place of which were a few black, hair-like roots. This nest also contained four eggs, in which incubation was advanced. In both instances the parent bird was flushed from the nest and remained near, flitting from bush to bush, but not displaying great solicitude, either by voice or action. The eggs have the plain white ground with spots of brown and red of various shades, common to most Warbler eggs. The markings have a tendency to wreath the larger end in some specimens, and spots rather than blotches seem the rule; but there is nothing that would distinguish them with certainty from the eggs of other ground-nesting Warblers.

In addition to these nests I have frequently seen these Warblers leading a callow brood about in June, and have come to regard them as regular, though rare, summer residents in this vicinity. Though Dr. Coues, in his description of this species in the "Key" says: "female—lacking the black cap," this can hardly be a constant feature, as I have carefully noted the appearance of the parents when I have found them with nests or young and always find the cap present with both. Wilson's Warblers do not tarry long after the broods are reared and are able to care for themselves, and few are found here after the first of September."

Mr. Morrell's remarks as to the female having the black cap too, seems to be correct, as I have noted the same, though the cap on the female seems to be not so black and distinct as in the male. The accompanying photograph of the female on the nest shows the cap quite distinctly.

The next instance of breeding in the State I find was made by Mr. L. W. Brownell of New York, near Bangor. I wrote Mr. Brownell for data and received the following: "The two nests of Wilson's Warbler taken by me near Bangor in June, 1900. No. 1 was taken at Bangor on June 19th. It

contained four fresh eggs. The nest was placed on the ground, well hidden in a small clump of grass, at the foot of an alder sapling. It was composed entirely of skeletonized leaves, dried grass with one or two horse-hairs in lining, was a very frail structure and came to pieces when removed. Its measurements were: Outside diameter 3 inches; inside diameter $1\frac{3}{4}$ in.; outside depth 2 in.; inside depth $1\frac{1}{4}$ in. Eggs measured: 0.58×0.45 , 0.60×0.46 , 0.60×0.45 , 0.59×0.45 . Both old birds were seen and identification was complete.

The date of the finding of the second, I do not exactly remember, but was about ten days later or about June twenty-ninth. The nest contained well fledged young, in fact they left the nest while I was looking at them. The nest was similar in every respect to the first, perhaps a trifle stouter and placed in a position almost identical with that in which the first one was placed. The old birds approached me very closely, feeding their young within a couple of feet of my hand." His brother, C. L. Brownell, who was with him that season, writes me: "Personally I am convinced that *Wilsonia pusilla* is not so uncommon as is generally supposed, but its eggs remain rare because of the difficulty in locating its nest, which it conceals to perfection. While at or near Bangor, I disturbed at least half a dozen pair which undoubtedly had nests near me, but in no case could I locate them." I find no other records of nests being found in the State except one found by the writer on June 1, 1902. The locality was the edge of the Hermon Bog, and was discovered but a few moments after finding the nest of *D. p hypochrysea* as described by Prof. Knight in his article on this species in the JOURNAL Vol. VI Apr. No. p. 39.

The description of the nesting site of *pusilla* is identical with his description of *hypochrysea*, except that it was at the edge the bog, some one hundred yards from the nest of *hypochrysea*. Soon after we located the nest of the Yellow Palm, as we were about to leave the bog, I flushed a small bird from a nest, well concealed under a thick mass of grasses and weeds

at the foot of an alder bush. I could not make sure what it was, at first thinking it to be a Yellowthroat, but on seeing the nest and eggs I thought it was the Nashville. Both birds kept flitting near the nest, but kept well hid in the dense growth but I soon got a glimpse of the female. I was not quite sure what it was and called Prof. Knight.

We silently watched the birds, occasionally getting a quick glance at the female. When we both saw the male with the heavier cap markings, we excitedly exclaimed: Wilson's Black-cap! Tying my handkerchief to a bush near the nest we hastened with Mr. Billings and Mr. Hall to our wheels and pedalled back to Bangor for the camera and outfit, hastening back, as it was getting well along toward eve. On arriving at the bog, we easily located our white flag and soon had a photo of the nest and eggs. Then leaving the camera adjusted we concealed ourselves as far from the camera as the rubber tubing would allow, with bulb in hand we waited for a snap shot at the female, when she should return to the nest. I dare not attempt a pen picture of us two concealed in the short thick bushes, sweat begrimed, faces covered with cobwebs, eyes bright with enthusiasm, waiting for *pusilla* to return to the nest. Nor do I need to try to tell you how numerous were the mosquitoes, that made life miserable for us, for, I think the most of my readers can picture it all in their minds. At last the critical moment came and we had perhaps, snapped the camera for the first time, on a female Wilson's Black-cap on the nest. We herewith give you the two exposures made by Prof. Knight.

The nest was made up outside of fine dead grasses (neatly woven, yet a frail structure) lined with fine grasses and a very few horse hairs. It measures: Outside diameter 3.50 inches inside diameter 1.50. Outside depth 2.25, inside depth 1.25 inches.

The eggs were five in number with a dull white ground finely dotted over the entire surface with cinnamon, rufous and

lavender-gray, forming a slight wreath about the larger end. They measure 0.60 x 0.48, 0.58 x 0.47, 0.60 x 0.48, 0.59 x 0.49, 0.59 x 0.48. The eggs were perfectly fresh.

Wilson's Black-cap is often seen in company with the Canadian Warbler during the migrating season. Their manner of feeding somewhat resembles that of the Canadian species.

They feed in briery thickets, picking up insects very nimbly. They have the talents of a Flycatcher, and capture much of their food on the wing, but do not like the Flycatcher return to the same perch. It utters a pleasing song occasionally as it gleans for food, which I am unable to describe or liken to any other Warbler.

Nuttall describes it, "tsh-tsh-tsh-tshea," while Goss writes it "zee-zee-zee-zee-e": the latter would be my idea of it with a rising inflection on the last e. Several people have mentioned seeing this Warbler with young, but I am unable to learn of any others who have seen the nest. I believe as stated previous it is a more common nester throughout the Canadian Fauna, in this State than is commonly supposed, as there are many places in the northern part of the State, where I would confidently look for this species to be nesting."

686. *Wilsonia canadensis* (Linn.). Canadian Warbler; Canada Flycatching Warbler.

Plumage of adult male: above cinerous gray, the crown spotted with black or toward and on forehead black, narrowly edged with grayish; auriculars and sides of neck black; yellow line from bill to eye and yellow eye ring; a series of black spots like a necklace across the breast; throat, lower breast and belly yellow. Plumage of adult female: very similar to that of male but nearly always readily distinguishable; the black spots on forehead are lacking, the lores less distinctly black, the necklace less distinctly black and more limited. Immature plumage: quite similar to that of adult female, but the necklace is an obscure series of duller or more grayish spots. Wing 2.57; tail 2.28. Bill with bristles at base.

Geog. Dist.—Breeding in the Alleghany Mountains in North Carolina, northward in the mountains, and from northern Minnesota, northern Illinois, central New York, eastern Massachusetts and Maine, northward to Newfoundland, southern Labrador, Hudson Bay, Cumberland House, Alberta and

Athabasca; migrating southward along the Atlantic coast, from the Ohio Valley eastward; wintering in Peru and Ecuador; not recorded from Florida for the last thirty years.

County Records.—Androscoggin; rare summer resident, (Johnson). Aroostook; common at Fort Fairfield, (Batchelder, B. N. O. C. 7, p. 110); common throughout the county in the deeper, mossy carpeted, mosquito infested woods, (Knight). Cumberland; rather common summer resident, (Brown, C. B. P. p. 10). Franklin; common summer resident, (Richards). Hancock; not common in migrations and still rarer as a summer resident, (Mrs. W. H. Gardner); locally common in northern sections of county as summer resident, (Knight). Kennebec; rare summer resident, (Larrabee). Knox; summer, (Rackliff). Oxford; occurs at Upton, (Brewster, B. N. O. C. 3, p. 61). Penobscot; common migrant, locally common summer resident, (Knight). Piscataquis; not common, (Homer). Sagadahoc; not uncommon migrant, (Spinney). Somerset; quite common summer resident, (Morrell). Waldo; at least a pair bred at Islesboro, two being seen July 9, 1900, (Howe, J. M. O. S. 1901, p. 15); locally common summer resident, (Knight). Washington; common summer resident, (Boardman).

I have seen the species near Bangor as early as April twenty-fifth, but they more usually arrive from May tenth to fifteenth, and remain in fall until the very last of August, and more rarely the first part of September. In migration they frequent the open woods, pine uplands, and shrubbery to quite an extent, feeding in the limbs of the trees, catching much of their prey on the wing, and in general following the habits of related species. They eat moths, flies, beetles, grubs, caterpillars of the smooth, hairless type such as canker worms, the eggs of insects, spiders, mosquitoes and similar insects. The general song uttered is much like "su su swe su su" and in Warbler Songs Mr. Jones gives a very similar version, "tu tu tswe tu tu" and also quotes Mr. Thompson as giving a version like "rup-it-chee, rup-it-chee, rup-it-chit-it-lit" which song or anything approaching it I have never heard uttered by our Maine individuals. The most often call is a "chuck," "chip" or "tchip" which serves as a call note or as a note of indignation or alarm when uttered louder and more sharply.

In the nesting season as far as my observations go they resort to the deeper woods which are thick overhead and more open underneath, mossy carpeted, dotted with clumps of ferns

and reeking with moisture. Here the nests are placed, at the foot of a clump of ferns, on a mossy hummock, under a log, in the upturned roots of trees very near the ground, and in general similar situations, always near the ground. I have usually readily found nests after they contained young, by watching the parents carry food to them, but previous to the eggs hatching generally the only way to discover a nest is by flushing the female from it, which is a matter of some difficulty. The nests are composed of fine strips of bark, dead leaves and moss, lined with fine black rootlets. The eggs are four or five in number, white, speckled and spotted with reddish brown and lilac gray. The spots are most numerous about the larger end, often arranged in a circle about the crown, and the size averages about 0.68×0.51 . As the nests I have found from May thirtieth to June twentieth have contained young, I would infer that eggs might be found in late May and early June.

Genus SETOPHAGA Swainson.

✓ 687. *Setophaga ruticilla* (Linn.). American Redstart.

Plumage of adult male: above shining black, slightly browner on wings and tail; basal half of wing feathers and basal portion of all but the inner tail feathers salmon; throat and breast black; sides of breast and flanks deep reddish salmon; belly white, tinged with salmon. Plumage of adult female: back ashy, head grayish; basal portions of wing and tail feathers dull yellow in female instead of salmon; sides of breast and flanks yellow; otherwise white below. Immature plumage: in general very similar to the female, rather browner above, the yellow under parts lighter yellow or merely yellow tinged, and the basal portion of wing and tail feathers paler yellow; the immature males assume patches of black with their first nuptial plumage, and the second year become indistinguishable as a rule. Wing 2.50; tail 2.32. Bill with bristles at base.

Geog. Dist.—North America, breeding from North Carolina and Arkansas to Labrador and Fort Simpson, and in Utah, Idaho, eastern Washington and British Columbia; wintering in the West Indies, eastern Mexico, Yucatan, Guatemala and Ecuador.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; common, (Batchelder, B. N. O. C. 7, p. 110); common in the Wool-

astook Valley, (Knight). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident, (Knight). Kennebec; abundant summer resident, (Sanborn). Knox; summer, (Rackliff). Oxford; common, (Nash). Penobscot; very common summer resident, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell). Waldo; common in 1894 and 1899 at Islesboro, (Howe, J. M. O. S. 1900, p. 31); common summer resident, (Knight). Washington; very abundant summer resident, (Boardman).

Mr. Brown found the species near Portland as early even as May tenth, or from that date to the twenty-second it arrived in spring, and remained until September or even to October ninth. At Bangor it arrives about May fifteenth and the last stragglers are gone by September twenty-eighth. In general they frequent the rather open hardwoods, thickets, roadside deciduous trees, clumps of tall shrubbery, the bushy and tree-lined banks of streams and ponds, and in general rather open deciduous growth. They prefer to keep well up in the foliage as a rule, peering around the foliage and about the limbs, eating various larvae of moths, butterflies, eggs of various insects, beetles, lice and catching on the wing flies, mosquitoes, gnats, perlids, caddis flies, winged ants and similar insects. As they pass through the foliage in short flights, they have a peculiar habit of expanding their tails so as to show the yellow or salmon colored basal portions, also often drooping their wings.

The male sings frequently, and I would render the commoner type of song as "chee chee che pa-pa." In Warbler Songs, p. 26, it is variously rendered as follows: "che che che che-pa," "wee-see, wee-see-wee," while Mr. Chapman is quoted as giving it the utterance of "ching ching chee, ser-wee, ser-wee, swee swee-e-e-e." The female occasionally sings portions of these notes. As alarm notes I have heard them utter a "c-h-e-a-p" in a plaintive tone, but more often it is a "chip" or a "chick."

The nests are placed quite variously, sometimes thirty to forty feet from the ground in the crotch of a maple or elm, occasionally in some other hard wood tree at a good elevation but more frequently the nests are placed lower down, at heights

varying from six to eighteen feet in second growth maple, birch and beech thickets, or in willow, poplar and elm saplings along the bank of a river or stream in a thicket.

A nest found in the fork of a maple sapling eight feet from the ground near the shore of the Stillwater River on a small wooded island contained five eggs on June 2nd, 1896. Three other nests containing four and five eggs were found in similar situations on the same island which was not over two acres in extent. These nests were all at heights of six to eight feet, in forks around which small bushy shoots had sprung up, and near the shores of the island. The one first mentioned is composed of fine silken vegetable fibres, willow cotton, and fine thread-like bark, mixed with numerous spiders' cocoons, held together with spiders' web and lined with fine grass and a few feathers. This nest is three inches in depth outside by one and a half inside, the outside diameter is three and the inside diameter one and a half inches. The eggs measure 0.69×0.51 , 0.66×0.49 , 0.66×0.50 , 0.67×0.50 , 0.66×0.50 .

In general the nests are always well cupped and firmly and compactly built, having a very distinctive appearance as a rule. Four or five eggs seems to be the usual number laid. The ground color varies from white to greenish or grayish white, speckled and spotted with cinnamon and olive brown and lilac gray. Some eggs are spotted quite evenly all over, but all have a tendency to be most heavily marked toward the larger ends, the marks being arranged in a circle about the crowns of the eggs. Usually the spots are fine so that the eggs are not wreathed by a confluence of the spots, but rarely I have seen eggs as heavily wreathed as those of the Yellow Warbler.

In general it takes a week to ten days to build the nest and the female attends to this as well as the task of incubation. I am not aware that the male feeds her while on the nest, though he is generally singing not far distant. It seems often the case that where the male bird is brighter colored and more apt to attract attention he does not venture near the nest as a rule,

but when harm threatens the cries and calls of his mate speedily bring him to take his share of the trouble. I have seen a male Redstart feed the young after they had left the nest and very rarely indeed carry food to them when they were nearly ready to leave. The incubation period is sometimes only twelve days, though I have known it to take fourteen for the eggs to hatch. The young leave the nest in twelve to fourteen days as a rule. Only one brood is reared in a season with us, the eggs being deposited from as early as June second to as late exceptionally as the thirtieth.

Genus ANTHUS Bechstein.

Subgenus ANTHUS.

697. *Anthus pensilvanicus* (Lath.). American Pipit; American Titlark; Brown Lark; Louisiana Lark; Wagtail.

Plumage of adults: wings fuscous, the coverts tipped with buffy whitish; above in general dark brownish gray; tail fuscous, the two outer tail feathers white tipped; buffy white line over eye; below buffy whitish, streaked with clove brown or fuscous on breast and sides. Immature plumage: above hair brown, streaked with black and edged with wood brown; otherwise very similar to adults. Wing 3.45; tail 2.70.

Geog. Dist.—North America, breeding in the higher Rocky Mountains and in Labrador and other subarctic regions; wintering in the Gulf States, Mexico and Central America.

County Records. — Androscoggin; fall migrant, (Walter, B. A. Co. p. 6). Aroostook; fall migrant at least, (Knight). Cumberland; irregularly abundant in the inland towns in autumn, a flock of two dozen was observed at Westbrook, May 15, 1889, (Norton). Franklin; common migrant, irregular, (Sweet). Hancock; irregular, (Mrs. W. H. Gardner). Knox; migrant, (Rackliff). Oxford; was common at Wilson's Mills in September and October, 1879, (Mead). Penobscot; common some falls, rare others, irregular or sporadic, (Knight). Piscataquis; common migrant, (Homer). Sagadahoc; took my first specimen December 13, 1901, (Spinney). Somerset; one of the most regular and abundant of fall migrants in this locality, (Morrell, Me. Sp. Nov. 1897, p. 21). Waldo; irregular fall migrant, (Knight). Washington; common migrant, (Boardman).

Mr. Brown in his *Birds of Portland* records the species as occurring there from the middle of September, the thirteenth

or thereabout, to the last of October. Near Bangor they occur approximately the same time in the fall. Spring records are very few and far between but I find one date recorded for Castine, May 2, 1903, and two or more records of May 12 for Avon, and in addition Mr. Norton's one of May 15, 1889, for Westbrook. It is very evident that in the spring migration the birds either pass over the State without alighting or being seen, or else they pass northward by some different migration route from that they follow in the fall. Which of these is the case there is not sufficient data at hand at present to show.

In the fall the birds feed in flocks in the grassy fields, meadows and pastures. At the approach of somebody they run through the grass, stopping occasionally to wag their tails and twitch their wings, finally taking fright and rising into the air together to fly away with their soft characteristic cry "pee-pee, pee-pee." This cry is kept up more or less constantly as they fly and often also uttered while on the ground. Their food consists of the various insects and seeds picked up in the grassy tracts they love to frequent.

In their northern homes their nests are said to be placed on the ground, and to be composed of dry grasses and moss rather loosely constructed. Four to six eggs are said to be laid and these are variously described as bluish or grayish white, thickly and evenly specked with cinnamon and vinaceous brown, or as dark chocolate colored, overlaid with specks and streaks of grayish brown. The average measurement is given by Davie as 0.76 x 0.56.

Family TROGLODYTIDÆ. Wrens, Thrashers, etc.

Key to the species of TROGLODYTIDÆ.

- A. Tail without black bars; birds 9.00 in length or more.
 - 1. Crown black. Catbird.
 - 2. Crown not black.
 - §. Under parts whitish or white and unstreaked; outer tail feathers white. Mockingbird.

- §§. Under parts white or whitish, heavily streaked with black; upper parts, wings and tail rufous. Brown Thrasher.
- B. Tail barred with numerous small black or blackish bars; birds under 6.00 in length.
1. Crown, back and wing coverts streaked with white. Short-billed Marsh Wren.
 2. Crown, back and wing coverts not white streaked.
- §. Wing over 2.25; rufous color above. Carolina Wren.
- §§. Wing under 2.25; upper parts grayish russet tinged brown.
- ?. Under parts whitish, barred with black chiefly on sides; tail more than three-fourths as long as wing. House Wren.
 - ?? Under parts brownish, barred with black; tail less than three-fourths as long as wing. Winter Wren.

Subfamily MIMINÆ. Thrashers.

Genus MIMUS Boie.

703. *Mimus polyglottos* (Linn.). Mockingbird.

Plumage of adults: above ashy or mouse gray; wing coverts edged with grayish, tipped with white and basal half of primaries white; wings and tail darker than back or blackish; outer tail feathers partly to wholly white; below grayish white to white. Immature plumage: grayish sepia brown above, mottled with darker; below white, spotted with olive brown; otherwise very similar to adults, Wing 4.54; tail 4.95; culmen 0.72.

Geog. Dist.—Mexico, Lower California to Middle California, and the Bahamas, southern Ohio, Colorado and Maryland, rarely to Massachusetts; wintering from Virginia southward: casual in Maine.

County Records.—Cumberland; have one, an escaped cage bird, taken at Gorham, August 12, 1890, (Norton); one seen at Portland, January 19 to February 19, 1897, (Brown, Auk, 1897, p. 225). Knox; one taken in February, (Rackliff); have one shot in Vinal Haven, February, 1891, an escaped cage bird, (Norton). Oxford; (Nash). Piscataquis; one shot in Monson, October 20, 1884, which did not seem to be an escaped cage bird, (Homer). Sagadahoc; one specimen, (Spinney). Washington; one observed near Calais in 1870, (Boardman).

Though specimens have been captured more or less often, nearly all show indications of being escaped cage birds. The species is quite often kept in captivity and opportunity to escape is generally accepted by this species if offered. A bird escaping in summer would have abundant opportunity to live until it had lost all evidences of captivity, while even in win-

ter near Portland one was under observation more or less from January nineteenth to February nineteenth. Though the species has been known to breed in Massachusetts, this would seem very likely the nearest to Maine that the species has approached of its own accord.

My acquaintance with the Mockingbird in southern California was quite extensive, and some observations of it near Marlin, Texas, have gone to show me that its habits there were somewhat different from those of the California birds. Of course primarily and everywhere the male Mockingbird is a songster during the nesting season. Mounted on top of a "prickly pear," in a live oak, orange tree, elder or some other suitable perch, he sings for hours. The song now partakes of certain characters of that of the Catbird, again of that of the Brown Thrasher, the California Thrasher and others of the same family, while again snatches of almost every other song bird appear in the Mocker's repertoire, and I have even been deceived into thinking I heard the cry of the Valley Partridge when it was really this mimic. The song is uttered with much the same style and gusto as that of the Catbird or Brown Thrasher, but is of course more variable and involves snatches of melody taken from other birds.

When perched the Mockingbird reminds one not distantly of the Loggerhead Shrike, but the manner of flight is different. The species can adapt itself to a great variety of conditions. On the driest mesas of southern California I have found the species nesting in the sage bushes. Along the slopes of the dry cañons I have found them placing their nests in the spiny plants of "prickly pear" and "chollas" cactus. In the moist river bottoms I have found them nesting in alders, live oaks and other trees, while in the orange groves they readily build in the orange trees. In Texas they seem to prefer the various orchard and hedgerow shrubbery near Marlin.

The nest is very similarly built, no matter whether it is placed eighteen feet from the ground in a tree or only two or

three feet up in the prickly cactus plants, and nests ranging between these extremes may readily be found. The nests are composed outwardly of small twigs and weed stalks, lined with roots and vegetable fibers, and in size quite bulky, approaching in general size to nests of the Loggerhead Shrike, but of different appearance. The eggs are four to six, more often four or five in number, pale greenish blue to bluish white in ground color, spotted and blotched with cinnamon and reddish brown. The spots are more numerous and larger towards the larger ends of the eggs. In California the nesting season ranged from late April to July, and at least two and very probably three broods were reared. Four eggs taken by me near San Diego, May 15, 1891, measure 0.95×0.73 , 0.94×0.73 , 0.95×0.73 , 0.95×0.73 .

The female bird does nearly all of the nest building as far as my experience goes, though rarely the male does lend a hand. A week to ten days suffices for completion of the nest. An egg is laid each day until the set is complete, though incubation often begins with the first egg laid. The eggs hatch in less than fourteen days, as far as my experience goes, and the young do not remain in the nest over two weeks. The male does his full share towards feeding the young and I have strong reasons for believing that he shares the work of incubation.

The food of these birds is wonderfully varied. They eat quantities of worms, beetles, grubs, moths, caterpillars, grasshoppers and other insects, feeding both on the ground and in trees. When the fruits are ripe they generally take their full share, eating figs, grapes, strawberries, blackberries, dewberries, prickly pears, mulberries and a far larger range of the softer cultivated and wild fruits and berries. At such times of course the species is a nuisance and does in some instances considerable damage, but on the whole is beneficial.

Genus GALEOSOPTES Cabanis.

704. *Galeoscoptes carolinensis* (Linn.). Catbird; Pussy.

Plumage of adults: crown and tail black; lower tail coverts chestnut; otherwise clear slate gray, paler below. Immature plumage: below mouse gray, mottled with brownish; crown cap less distinctly black; otherwise very similar to adults. Wing 3.55; tail 3.70; culmen 0.62.

Geog. Dist.—North America, breeding from the Gulf States to New Brunswick and northwestward to the Saskatchewan and British Columbia; wintering from the Southern States to Cuba and Panama; resident in Bermuda; accidental in Europe.

County Records.—Androscoggin; common summer resident, (Johnson). Arrostook; very rare at Houlton, nests, (Batchelder, B. N. O. C. 7, p. 109). Cumberland; common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; locally common summer resident, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds, (Nash). Penobscot; locally common summer resident, not as common as in former years, (Knight). Piscataquis; summer resident, not common, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell); not found in the northern county, (Knight). Waldo; (Spratt). Washington; not very abundant summer resident, (Boardman); rare, one record, (Clark). York; common, (Adams).

Near Bangor the species occurs quite commonly from May seventeenth to about September twenty-first, while Mr. Brown gives the time of its arrival at Portland as about May seventeenth to twenty-fourth. The species is rare, local or absent from the northern and eastern half of the State and not found in the deep, dense wooded regions. In southern Maine it is common. It is a species of the low swampy thickets, roadside bushes and brier patches, borders of streams and ponds, and of garden bushes and shrubbery, rarely being found in trees at any elevation. The nest is placed in bushes, briars, alders, shrubbery and vines at no great elevation, usually four to ten feet from the ground. A typical nest was placed in a dense clump of alders along Kenduskeag Stream, Bangor, about four feet from the ground. This nest was composed of fine strips of grape vine bark and other bark, fine weed stems, and lined with fine black tendrils and rootlets. It measures three inches

in depth outside by one and a half inside, the diameter externally is four and internally two and three-quarters inches. When found, June 2, 1894, it contained four eggs measuring 1.01×0.71 , 0.98×0.70 , 0.94×0.68 , 0.99×0.71 . The eggs are a deep bluish green, unspotted. Four to six, more often five is the usual number laid.

The male bird helps build the nest, and from seven to eleven days is required for nest construction. An egg is laid each day until the set is completed, and both birds share the duties of incubation. The eggs hatch in thirteen to fifteen days and the young remain in the nest about sixteen days. I have known the male bird to engage in song while on the nest and to keep it up for some minutes at a time. Both parents feed the young, and in July a second brood is generally reared. They remove and even eat the excrement voided by the young birds. The food of both adults and young consists of insects, such as beetles, caterpillars, grubs, flies, moths and similar things, gleaned from the foliage of the trees, from the ground and even caught in the air, while all kinds of native berries and fruits are also highly relished. Garden berries and fruits are occasionally molested to some degree, but are more than paid for by the insects these birds consume.

In habits the birds are rather secretive, uttering their cat-like cry from the depths of a bush or thicket when disturbed, an occasional glimpse being caught of them as they hop from bush to bush, flirting their tails or expanding them as they dive across an open space in the bushes. The male bird sings for several minutes at a time, and more or less frequently as the spirit moves him, perhaps more often in early morning and late afternoons than at other times. He perches in or near the top of some bush in a thicket where he can see and still be well concealed. Then he pours out his melody of song, closely akin to but not so refined as that of the Mockingbird, for the Catbird's song is often interrupted by the cat-like call or mew, interspersed with snatches of song and

imitations of the various small birds of the neighborhood. At times the song has a soft, ventriloquial character, seeming to come from everywhere about, again it is loud and easily traced to its source. At the approach of any disturbing element the song ceases and the angry catlike mew is uttered. The birds are very brave in defending their homes against cats, and other predaceous birds or animals, flying at them with angry mewings. A small stuffed Owl placed where a Catbird can discover it is soon made the center of a mobbing force of small birds summoned by the angry calls of the Catbird.

Genus *TOXOSTOMA* Wagler.

Subgenus *METHRIOPTERUS* Reichenbach.

705. *Toxostoma rufum* (Linn.). Brown Thrasher; Brown Thrush; Song Thrush; Mavis; Mocking Thrush.

Plumage of adults: above rich deep cinnamon rufous; wing coverts whitish tipped; below white, washed on the throat and sides with buff and streaked with black. Immature plumage: above mottled with clove brown, otherwise very similar to adults. Wing 4.10; tail 5.15; culmen 0.97.

Geog. Dist.—Eastern United States, west to the Rocky Mountains, breeding from the Gulf States to southern Maine, Ontario and Manitoba; wintering from Virginia southward; accidental in Europe.

County Records.—Androscoggin; common summer resident, (Johnson). Cumberland; common in some parts of the county but not so near Portland, (Brown, C. B. P. p. 4); common near Portland, (Lord); rare summer resident, (Mead). Franklin; rare summer resident, (Richards). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds, (Nash). Sagadahoc; common summer resident, (Spinney). York; quite common summer resident, (Adams).

This is a typical species of the Alleghanian fauna, its range east of the Kennebec River being very limited, but locally in southern Maine, west of the Kennebec it occurs even in quite considerable numbers. I have met with the species in considerable numbers along the Kennebec River from Augusta to Gardiner. Mr. Brown gives the date of arrival near Portland in his Catalogue as the first week of May, from which time it remains until into September. I find recorded in the migration

reports in J. M. O. S. for June, 1906, p. 39, the date of arrival at Skowhegan as April 8, which is indeed much earlier than the average dates given for elsewhere in the State.

They are birds of thickets, hedgerows, garden shrubbery to a less degree, orchards and woodlands of the open bushy type. A majority of the individuals I have observed in Maine were singing in the tops of trees by the roadside, but in Illinois the species usually sang from the depths of the osage orange hedgerows and thickets. They are great songsters, keeping up a flood of melody much like that of the Mocking Bird and lacking the harsh tinges of the Catbird's song. The song continues for some minutes, and in addition to the typical song of the species snatches and notes of the song of other birds are sometimes interspersed which I can vouch for myself though others have denied that this species is a "mockers."

In feeding and habits in general when not singing, the species is rather terrestrial in habits, hopping along the ground and scratching among the dead leaves, exploring through piles of dead brush which are heaped up, or skulking through the bushy thickets. As they run along the ground with their prominent tail in the air, flirting it about as it is partly spread out, they present a very characteristic appearance. They both run and hop, perhaps hopping more frequently but running when desiring to make the greatest possible haste, wings partly spread out and used to help to greater speed. Their call is a "chuck," uttered when angry or alarmed, and I have also heard the bird when frightened from the nest utter a distinct hiss.

The nests are rather large and bulky, and are placed in brush heaps, thickets of various shrubbery, and similar locations, very rarely indeed in trees. These remarks refer to my knowledge of the species as gained in Illinois and Kansas, as I have never succeeded in finding their nests in Maine, and all my further remarks on the species apply to the species as observed by me in the west, though probably in general the habits of

our Maine individuals are not different. A typical nest found, May 24, 1896, was placed on the horizontal limb of a locust shrub seven feet from the ground. This nest is built externally of twigs, strips of bark and leaves, lined with rootlets and horsehair. It measures three inches in external depth by one inside, while the diameter outside is six and a half and inside three and a half inches. The eggs measure 1.10×0.75 , 1.10×0.77 , 1.12×0.75 , 1.11×0.77 , 1.08×0.74 .

Near Dunlap, Illinois, a favorite nesting site was either in the thorny branches of the osage orange hedges which border the fields and roadsides, or in the heaps of dead branches trimmed from these hedges and piled up on the ground. In general three to six, more usually four eggs are laid. These are from white to pale greenish white colored, very thickly and evenly sprinkled and peppered with cinnamon and reddish brown all over, while many eggs are also wreathed with heavier markings about the larger ends.

Both birds aid in nest building which requires from seven to ten days. An egg is laid daily until the set is complete, and both birds share in the work of incubation. The male sometimes sings while on the nest. A second brood is reared in Illinois, probably this is also true in Maine. When incubating the female often sits until removed by hand. The food consists of beetles, flies, caterpillars, bugs, and in general the various insects found on the ground and in the bushes. They also, I regret to say, take occasional toll from cultivated fruits such as cherries, strawberries, raspberries and blackberries, but do comparatively little damage in this way, preferring the wild fruits and berries. Their chief diet is of an insect nature and the fruits and berries are largely eaten as a relish.

Subfamily TROGLODYTINÆ. Wrens.

Genus THRYOTHORUS Vieillot.

Subgenus THRYOTHORUS.

718. *Thryothorus ludovicianus* (Lath.). Carolina Wren; Mocking Wren.

Plumage of adults: chestnut or rufous brown above, the wings and tail finely barred with black; wing coverts with lighter terminal spots; whitish line over eye; below deep cinnamon, whiter on throat; flanks with a few black bars. Immature plumage: very similar. Wing 2.34; tail 2.05; culmen 0.64.

Geog. Dist.—Eastern United States, breeding from the Gulf States to southern Iowa, northern Illinois and southern Connecticut, and occasionally straggling even into Maine; resident in the southern portions of its range.

County Records.—Kennebec; a specimen taken at Waterville is in the collection of birds made by Prof. Chas. Hamlin at Colby University. Oxford; I have in my collection a set of eggs of this species taken at Norway Lake in June, 1893, and I saw both birds, (Nash).

This species is of course a straggler into Maine, being rare, even in southern New England. I have seen the set of eggs in Mr. Nash's collection and there is not the slightest doubt in my mind that they are eggs of the Carolina Wren. Indeed it is not really any stranger that the Carolina Wren should be found breeding at Norway Lake than it is to find the Short-billed Marsh Wren at Bangor and not elsewhere in the State. The Carolina Wren as a living bird I have never met. Other observers state that in the south it is distinctly a bird of the forests, frequenting bushy heaps, rocky places in the woods, fallen tree tops, and similar thick rough tangles. All Wrens are nervous, excitable and full of activity, but Mr. Chapman records the fact that this species is the most active and excitable of all, dodging about, now here, now there, scarcely still for a minute, and accompanying this bodily exertion by more or less constant song.

The nests are said to be placed in hollow logs and stumps, wood piles, brush heaps, and very seldom in nooks of buildings. A nest sent me from Avery's Island, Louisiana, was

taken June 7, 1896. It was composed of dry grass, leaves, twigs and similar material, lined with fine black roots, and was situated in an old hollow log. The eggs measure 0.76×0.58 , 0.74×0.58 , 0.76×0.58 , 0.75×0.58 , 0.74×0.58 . In color various sets vary from whitish to salmon buff, sprinkled, spotted and often wreathed with reddish brown, pinkish and lavender. Four to six, generally five eggs are laid. Davie states that in central Ohio the nest is a massive coarse structure, made of strips of corn stalks, grasses, hay and leaves, lined with chicken feathers, fine dry grasses and horsehair. The nests are usually quite bulky, and some are arched over or dome shaped.

Genus TROGLODYTES Vieillot.

Subgenus TROGLODYTES.

721. *Troglodytes aedon* Vieill. House Wren.

Plumage: above cinnamon olive brown, slightly more reddish on rump and tail; indistinctly barred on back; wings and tail finely barred with dusky; below whitish with rather obscure bars of pale drab on the throat and sides, and bold bars of black on the flanks. Wing 2.00; tail 1.80; culmen 0.50.

Geog. Distribution.—Eastern United States and southern Ontario; breeding north to Manitoba, Montreal and New Brunswick; wintering from South Carolina southward.

County Records.—Androscoggin; tolerably common summer resident, (Call); rare summer resident now, (Swain). Aroostook; August 10, 1898, a nest was found containing four young birds near Caribou, (Allen, J. M. O. S. 1901, p. 12). Cumberland; not seen in many years, formerly occurred, (Mead); saw several pairs in 1900, evidently breeding, (Swain). Franklin; a pair seen in 1896, evidently breeding, (Swain). Hancock; some years ago a pair built in a bird house in my yard, (Dorr). Kennebec; (Hamlin, L. B. W. R. S. Me. B. A. 1865, pp. 168-173). Knox; formerly occasional visitant, (Norton). Oxford; breeds commonly, (Nash). Penobscot; formerly nested in Bangor, not known to occur here for twenty years, (Knight). (Somerset); rare summer resident, (Morrell). Washington; rare here, (Boardman).

In my boyhood days the House Wren was a common bird near Bangor, arriving about May eighth and remaining until late August, but at the advent of the English Sparrow the

species began to diminish in numbers and none have occurred here since 1887, and the species began to lessen in numbers about 1885. I remember the time well because when I first began to collect eggs it was easy to obtain eggs of the House Wren, but in three or four years none could be found and the birds too were gone. They were active, nervous little busy-bodies, singing constantly, as they hopped from perch to perch.

The species as a whole is essentially a bird of civilization, frequenting the vicinity of farm houses, city gardens, barns and outbuildings, though in the west I have found the subspecies of the Pacific coast inclined to build in hollow trees along the streams miles from civilization. In general, however, in the east the birds prefer the settled districts, nesting in bird boxes and bird houses, tin cans, crevices in barns and outbuildings, brush heaps, and holes in various orchard trees.

The nest is a rather bulky structure of twigs and grass, lined with hair and feathers. In general the size of the nest is adapted to the size of the cavity, the site selected being always well crammed with sticks and twigs. The number of eggs laid varies from five to twelve, more often about six in number. They are white or vinaceous in color, but so thickly peppered and sprinkled with reddish brown as to usually completely hide the ground color, and in addition many eggs are wreathed with heavier markings of the same color at the larger end. A set in my collection from Wisconsin were taken June 7, 1896 and measure 0.61×0.49 , 0.61×0.48 , 0.60×0.47 , 0.58×0.46 , 0.61×0.48 , 0.59×0.48 , 0.58×0.46 .

My best recollection of these birds and their habits is due to a comparatively recent study of them in Illinois, and the results of my observations there are embodied in the following notes. The male accompanies the female while she is engaged in nest building, singing his pleasing little twittered lay frequently, and helping also in bringing nesting material. Both birds also keep up a more or less frequent chirping and chatter-

ing, and occasionally the female also sings, though not as loudly and lustily as the male.

Nest building is interrupted by frequent spells of love-making, flirtations, family quarrels in which the mated couple fight outrageously for a short time (doubtless over some difference of opinion regarding nest building,) but much of the time is also taken up in "regulating" such other birds and animals as come near the scene of activity. Nest building however progresses rapidly in spite of the energy used up in twitching tails, fluttering wings, hopping along the fences and from perch to perch, chattering and other diversions.

The average nest takes about a week from its beginning until it contains eggs, and nest building not infrequently continues for quite a period after the eggs are laid. Some nests are entirely completed for several days before eggs are laid, and rarely I have found an egg in a nest which was only started four days previously. In brief, the time from the beginning of a nest to the laying of the first egg may range from four to fifteen days. Occasionally nests are built which are never laid in, though no obvious reason of this was known. An egg is usually laid daily until the set is complete.

Both birds aid in the incubation, but the female does the most of it, only occasionally being relieved by the male; in some cases he even sings on the nest. Though lacking any very exact data as to the incubation period I am able to state that it is not less than eleven nor more than thirteen days, rather nearer the former period I think. Both birds tend the young, feeding them and carrying out their excrement in their mouths, and when at the end of about fourteen days these have left the nest a second, and sometimes later on even a third brood may be reared in the same nest. They are inclined to return to the very same nesting site and locality season after season. Their food consists of spiders, flies, small caterpillars, grubs, beetles and similar small insects.

Genus *OLBIORCHILUS* Oberholser.722. *Olbiorchilus hiemalis* (Vieill.). Winter Wren.

Plumage: dark cinnamon brown above, the wings and tail barred with dusky, and the back rather faintly barred with whitish; below pale cinnamon brown, the lower breast, sides and belly barred with russet, dull black and white alternating; throat and breast obscurely white streaked. Wing 1.87; tail 1.25; culmen 0.36.

Geog. Dist.—Eastern North America, breeding from the northern States northward, and southward along the Alleghany Mountains to South Carolina; wintering from Massachusetts (rarely from southern Maine) to Florida.

County Records.—Androscoggin; fairly common migrant, (Johnson). Aroostook; common summer resident of the deeper woods, (Knight). Cumberland; rare migrant, (Mead). Franklin; common summer resident, (Sweet). Hancock; common summer resident of the deeper wilder regions, stragglers winter along coast, (Knight). Kennebec; rare migrant, (Larabee). Knox; winter, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident of the wooded regions, (Knight). Piscataquis; common summer resident, (Homer). Somerset; quite common summer resident, (Morrell); very common in the northern wilds, (Knight). Waldo; common summer resident in the wilder regions, stragglers in winter coastwise, (Knight). Washington; summer resident, not abundant, (Boardman); locally common summer resident in western sections, (Knight). York; migrant, (Adams).

Mr. Brown in his Catalogue states that the species arrives near Portland about the middle of April and remains about three weeks, while in the fall they appear about the middle of September for a month's stop before migrating southward. Near Bangor I have seen the species in migration as early as April first, more often the middle of the month, and they remain until November fifteenth to twentieth in fair numbers. An occasional individual seen in December, January and February here indicates a possibility of their occasionally wintering in the deeper more sheltered woods near Bangor, and I feel sure that an occasional straggler remains along the coast of Hancock and Waldo counties.

As a breeding bird the species is confined to the Canadian and Hudsonian faunal areas, and in the deeper wilder tracts of northern, western and eastern Maine it is a common summer

resident, occurring likewise on some of the larger wooded islands of the coast as a breeding bird, among which islands I would mention Islesboro, Deer Island, Little Deer Island and Mount Desert.

The species is seldom seen in migration unless sought by those knowing its habits and fully aware just where to seek it.

They are of lowly habits, in migration seeking bushy pastures, brush heaps, bushy roadside thickets, stone walls, hedgerows and thick swampy tracts. Here they skulk through the undergrowth, now appearing with twitching tail and wings, but hopping quickly out of sight again. Occasionally they will at such times utter a rasping, chirring, scolding sound. In the summer they must be sought in the deeper, denser, evergreen woods and swampy mixed growth.

An occasional pair nest in the smaller groves near Bangor where a patch of dense, wet, mossy carpeted growth still remains, but go a few miles away into the deeper woods and they will be found common, and thence through the wilds of northern and eastern Maine they are frequently heard in the summer. The rich, wild, sweet, babbling, indescribable song is characteristic and unmistakable. I had full rather stake my identification of the species on the song than on a fleeting or even comparatively good view of the living bird. Here and there in the woods rises this song, beginning meek and lowly and gaining in sweetness and character to its completion, and one songster answers another. It is harder to get a view of the birds themselves, even when the sounds indicate that the woods contain a number of them.

As to their nests, I shall never forget the day when in the mossy carpeted woods back of the University of Maine I saw a Winter Wren enter a round hole at the base of a mossy stump. On approaching the place I discovered the nest, a neat structure of green sphagnum moss, held together with fine spruce and hemlock twigs, the only means of entrance to which was a neat round hole on the side. This nest was placed in a place

where the stump had rotted away, so that the outer wall of the nest was seemingly a continuation of the rounded surface of the mossy stump. Alas! The nest contained no eggs, and though I returned to it many times subsequently it never was occupied again. I have since learned by experience that these birds are very touchy and will desert a nest which is merely touched, even if actually ready for eggs. Another habit they have is that of building mock nests in the immediate vicinity.

The nests are very variously situated, generally in hollows of low stumps, resting on or near the ground, under brush heaps, under upturned roots, old logs and similar places, but sometimes suspended from the branches of a spruce or fir tree even as high as ten feet from the ground. While these tree nests are more frequently the "mock" nests, they sometimes lay in one of these and rear their brood, but more often the real nest is on or near the ground. In structure all the nests I have seen were identical, being composed of green sphagnum moss, held together by small dead evergreen twigs, and with entrance on the side. A nest before me measures outside from top to bottom seven inches; depth of cavity inside two inches; diameter of entrance hole one inch; diameter of interior of nest one and a quarter inches; from bottom of entrance hole to bottom of nest outside four inches; diameter of nest outside four inches. The "mock" nests are generally unlined, while the nest which has been or is to be occupied is warmly lined with feathers and fur of the various woodland birds and animals.

Of the real details of their domestic life I can tell comparatively little. They lay from four to ten eggs, usually five or six, and full sets can be found by May twentieth, occasionally not until early June, while a second brood is reared in late June or July. The eggs are white, spotted with reddish brown and purple, chiefly at the larger end. Many eggs are nearly immaculate, others somewhat liberally spotted or even sparsely wreathed, but in general the eggs are sparingly marked. They measure about 0.69×0.49 . Both birds assist in nest build-

ing, and I have the best of reasons (though not absolute proof) for believing that the male continues to work on the "mock" nests while his mate is actually engaged in incubating the eggs. They eat the various species of insects, grubs, larvæ and insects' eggs which may be found near their homes.

Genus CISTOTHORUS Cabanis.

Subgenus CISTOTHORUS.

724. *Cistothorus stellaris* (Licht.). Short-billed Marsh Wren.

Plumage: wings and tail barred with black; upper parts streaked with white, black and ochraceous buff; breast, sides and under tail coverts tinged and washed with ochraceous buff; otherwise white or whitish below. Wing 1.78; tail 1.62; culmen 0.41.

Geog. Dist.—Eastern North America, west to the Plains, north to southern New Hampshire, southern Ontario, southern Michigan, southern Manitoba, and at Bangor, Maine; wintering in the South Atlantic and Gulf States.

County Records.—Penobscot; an adult male was taken near Bangor, May 30, 1898, and another later on, they have returned to the same breeding place annually since discovered, (Knight).

The occurrence of these birds near Bangor in the midst of a typical Canadian fauna is peculiar, especially as this is the only station positively known for the species in Maine. In a fresh water meadow of a few acres in extent, within a stone's throw of and surrounded by typical Canadian faunal surroundings and where in the near vicinity breed the White-throated Sparrow, Tennessee Warbler, Wilson's Warbler, Yellow Palm Warbler, Winter Wren and other Canadian birds, in the midst of such surroundings we find the only positively known Maine breeding place of these birds. Though absolute proof was lacking until I re-discovered them here in 1898, there is very good reason for believing that their nests and eggs were taken here nearly twenty years previously by Mr. Bowler, the taxidermist, though there is no evidence that any of these eggs taken by him are now preserved. Mr. Smith's record, (F. &

S., 19. p. 445) as nearly as it can be traced out seems to refer to the taking of nests and eggs near Bangor by Mr. Bowler.

It is possible that the species occurs elsewhere in Maine and has been overlooked. There have been reports brought to me of its occurring at Hudson and also on the meadows along Great Works Stream,* but in the absence of the needful specific proof I feel compelled to reject these records, even while admitting that it is my belief that they will ultimately be found correct. The birds are secretive and unless their song is heard by somebody who knows it or investigates it as something new and unknown to him, there is no probability of their being noticed in haunts they have frequented for years.

For years I passed by, through and around their meadow home near Bangor without getting the least proof that they were present there, once in a while getting a fleeting glimpse of a bird that (as I reported in List of Birds of Maine, p. 141) it seemed must be a Marsh Wren. Finally one day when passing along, the characteristic song "chip—chip—chip—chip, chip-chip-chip-chir-r-r-r-r" was heard which, while of course utterly different in timbre, reminded me of the song of the Pallid Wren Tit, for though harsh and lacking the bell like resonance of the Wren Tit's song it was uttered with much the same accentuation and syllaballization. As the song rang out again and again, the sage-covered mesas and slopes of southern California came to my mind, and in memory the panoramic record of many past experiences with birds there passed before me. Finally the persistent repeating of the song mingled with that of the White-throated Sparrow and other eastern birds brought out the realization that I was in the State of Maine, and that here was a bird song, new to me, being repeated from here, there and thither in the meadow. Investigation resulted in securing the first Short-billed Marsh Wren known to me from the region. Investigation seemed

* A colony of at least 100 pair was found by me on extensive meadows in Glenburn in 1907, since this article was written, and I have observed them there in early July, 1938.

to indicate that there were six pair of birds breeding in this limited region. The males poised and swayed on the tussocks of sedge and in the bushes, uttering their little song before described, then diving down into the sedges and working their way along out of sight with a grating, rasping call note, occasionally peering out at me. Judging by the specimens taken and comparing their actions while living with those of others seen, the males are more often seen and the females only seldom.

Though I have known these birds in this station for nine years now, I can add but little to the account given above of my first experience with them. The earliest date of arrival which is before me is May seventeenth, but I feel quite sure that I have seen the species at least two weeks earlier and made record of the fact in a note book which is mislaid so that the exact date is not forthcoming. In the fall they remain until at least October tenth. Careful search at intervals during each season has failed so far in revealing any nests, though it is most evident that they breed. They feed on the various kinds of small insects found in the meadow such as beetles, grubs, caterpillars, mosquitoes, caddis flies, moths, small butterflies and similar living things which they can catch while resting in the grass or on the ground.

Those who have found nests in other states describe them as spherical structures, composed of grass and sedges with the entrance on one side, the interior lined with cat-tail and other plant down, and they are said to be situated in a tussock of tall grass or sedges. Four to ten pure white eggs are said to be laid, averaging 0.62×0.46 . Usually eggs are said to be laid about the middle of June, but the sedges and grasses in the Bangor meadow do not reach sufficient height to afford nesting shelter until well along in July, although there is opportunity for them to nest in the dry bent-over sedges of the previous season, in which case their nests would be nearly on the ground and very difficult to find.

Family CERTHIIDÆ. Creepers.

Genus CERTHIA Linnæus.

786. *Certhia familiaris americana* (Bonap.). Brown Creeper.

Plumage: upper parts streaked or mottled with white, fuscous and ochraceous buff; rump pale rufous or russet; wings pale brown to clove brown with a pale buff band and whitish tips, edgings or markings on some of the feathers; tail pale wood brown, faintly barred, the feathers stiffened and pointed at the ends; bill slightly curved downward; under parts white. Wing 2.60; tail 2.65; culmen 0.56.

Geog. Dist.—Eastern North America, breeding from Maine and Minnesota northward, locally and rarely in Massachusetts and elsewhere southward; wintering from Maine southward.

County Records.—Androscoggin; common migrant, (Johnson). Aroostook; breeds at Houlton and Fort Fairfield, (Batchelder, B. N. O. C, 7, p. 109); breeds in the Woolastook and Fish River region, (Knight). Cumberland; common migrant, (Mead); early August to middle of May, (Brown, C. B. P.). Franklin; rare summer resident, (Swain); common in winter, rare in summer, (Sweet). Hancock; seen oftenest in November, (Mrs. W. H. Gardner); local resident, breeds, (Knight). Kennebec; quite common resident, (Powers). Knox; migrant, (Rackliff); summer resident, at least, probably permanent resident, (Knight). Oxford; common, breeds (Nash). Penobscot; locally common summer resident, local winter resident, commonest in fall, (Knight). Piscataquis; some years resident, (Homer). Sagadahoc; common migrant, (Spinney). Somerset; common resident, (Morrell). Waldo; common resident, most frequent in fall, (Knight). Washington; not very common, breeds, (Boardman); more frequently seen in winter and quite numerous in winter, (Clark). York; fairly common vernal migrant, (Adams).

In northern Maine, within the Canadian fauna the species is a permanent resident, locally common, but generally less frequent in winter and most abundant of all in October and November. In southern Maine it occurs generally from fall to spring. The habits of this species are readily observed as individuals are very tame. Beginning low down on a tree they wind their circuitous way about the trunk, now upwards, now backing slightly downward, but in general progressing in an upward direction, peering into every crack and cranny of the bark as if doomed forever to seek some unattainable object. When finally they reach the top of the tree or have progressed

up to the main branches they usually drop or fly to the trunk of a neighboring tree to repeat the performance.

Their pointed tails are used to brace them as they climb about the trunks. While so seeking they are usually silent, but at the minute when they drop to another trunk they usually utter a "chip" and rarely when some individual becomes excited while hunting food it will utter a "cree-cree-cree-cree-cree" in a rasping tone. In general this bird reminds one of a venerable and pre-occupied college professor searching near-sightedly for some rare and longed for object, and it is the last species in the world to be suspected of having time to express its sentiments in song. The Creeper does, however, have a sweet, plaintive song of three to six notes which is uttered during the breeding season.

With us when nesting time arrives they are to be sought in the richer, deeper, denser woods. Rich evergreen woods where there are plenty of dead stubs with partly stripped and hanging masses of bark adhering are favorite localities, but they are also to be found in mixed growth and in swampy woods where trees with partly stripped bark are frequent. Here behind the partly stripped or loosened bark of dead trees and stubs their nests are placed, generally a dead fir being preferred though trees of other sorts are sometimes selected. Behind the loosened bark a mass of twigs, strips of bark, bits of wood, sphagnum moss, lichens and usnea comprises the nest in which more or less spiders' cocoons are intermingled. Five to eight eggs are laid from as early as May twenty-fifth until as late as June thirtieth, but more usually full sets of eggs may be found about June fifth. The eggs are creamy white, spotted about the larger end, and often wreathed with hazel and reddish brown. An average egg measures 0.57×0.46 . There is still much to be learned about their home life.

The food consists of insects, being of the various species gleaned from the crevices and crannies of the bark, such as beetles, thysanurans, spiders, wire worms, grubs and larvae of

various sorts, spiders, small moths and the eggs of various insects as well.

Family PARIDÆ. Nuthatches and Tits.

Key to the species of PARIDÆ.

- A. Throat black.
 - 1. Crown black. Chickadee.
 - 2. Crown brown. Hudsonian Chickadee.
- B. Throat not black.
 - 1. Head crested. Tufted Titmouse.
 - 2. Head not crested.
 - §. Below ochraceous buff or rufous; throat white; wing under 3.00. Red-breasted Nuthatch.
 - §§. Below white; lower belly and under tail coverts mixed with rufous; wing over 3.00. White-breasted Nuthatch.

Subfamily SITTINÆ. Nuthatches.

Genus SITTA Linnæus.

727. *Sitta carolinensis* Lath. White-breasted Nuthatch; Sapsucker.

Plumage of adult male: top of head and hind neck glossy black; wings black, with white on primaries basally and a speck of white on their outer border near the middle: two middle tail feathers bluish gray, the others black with subterminal white patches; otherwise above bluish gray; white on sides of head and under parts, save that on the lower belly and under tail coverts there is a washing or intermixture of rufous. Plumage of adult female: crown and back of head with the black duller and more restricted, veiled with bluish gray; otherwise similar to male. Immature plumage: above cinerous gray with dusky edgings; otherwise very similar. Wing 3.55; tail 1.96; culmen 0.80.

Geog. Dist.—Eastern North America, breeding from the Gulf States to New Brunswick and Minnesota, west to the Rocky Mountains; usually resident throughout its range.

County Records.—Androscoggin; fairly common resident, (Call). Aroostook; occurs at Houlton, (Batchelder, B. N. O. C. 7, p. 109). Cumberland; common resident, (Mead); uncommon in migrations and winter, (Brown, C. B. P. p. 5). Franklin; common resident, (Swain). Hancock; rare and local resident, rather common in fall, (Knight). Kennebec; quite common resident, (Gardiner Branch). Knox; rare migrant, (Rackliff). Oxford; breeds,

(Nash). Penobscot; very common fall migrant, rare in summer and also very rare in winter, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; (Spratt). Somerset; not common resident, (Morrell). Waldo; resident, not common save in fall, (Knight). Washington; rare, breeds, (Boardman); quite numerous in spring of 1904, (Clark). York; not very common, (Adams).

The species in question seems generally distributed as a resident all over the State, though in general it seems uncommon save in a few localities as a permanent resident, being only really common in most localities in the fall migration and less so in spring. Perhaps the species is more readily noticed in the fall when it is associated with the Chickadees, Kinglets, Creepers, Red-breasted Nuthatches and allied birds in a loosely scattered, noisy, roving flock, venturing out into more open civilized localities. In the spring and summer they are birds of the woods, frequenting the denser hardwood growths, rich woods, mixed growth, and more seldom evergreen woods. In the fall and winter they are found in the more open woods, groves, and in orchards and wayside trees to a less degree. Here they may be seen running up and down a tree, backing or going ahead or sideways indiscriminately, head up or head down, on the trunk or under side of a limb, seemingly careless as to the position they take. A nasal "quank, quank, quank, quank" is uttered more or less frequently. In the breeding season they utter a peculiar, monotonous pitched "hah-hah-hah-hah-hah-hah."

The nests are generally excavated in hard wood trees, a hole being dug in the dead limb of a living tree or in a dead tree or stub. Often the deserted hole of a Woodpecker or some natural cavity is occupied. This is lined with fine bark strips, leaves, hair and feathers.

Five to ten, more often six or seven eggs are laid. These are white, thickly and rather evenly spotted with reddish brown and lavender, or in some types the markings are more congregated about the larger ends. A set of seven in my collection was taken from a nest in a maple tree, eighteen feet

from the ground, the nest being heavily lined with feathers. These eggs measure 0.78×0.56 , 0.77×0.55 , 0.79×0.56 , 0.79×0.55 , 0.78×0.57 , 0.80×0.54 , 0.79×0.54 . In general full sets of eggs may be expected in Maine from May first to May fifteenth. Both birds do more or less work on the excavating of the nesting cavity, and it takes from ten days to a month after nest construction is begun, depending on the amount of work necessary, before the eggs are laid, so that nest construction often begins in late March or early April. An egg is laid daily. I feel sure that only one brood is reared in Maine, though in other states two broods are said to be reared.

The food consists of the various insects picked up as the birds perform their acrobatic feats around and under the limbs and trunks of trees. They also often dig into or pry off bits of bark in their search for insects. Wire worms, grubs, spiders, ants, beetles, and in general the eggs and larvae as well as the insects inhabiting the limbs and trunks of trees are eaten.

The observations of others regarding the habit this species is said to have of wedging a nut such as a beechnut or acorn into a crevice of the bark, and then by blows of the beak breaking it open, I have never been able to see for myself, nor have I ever found anybody who would personally state that they had seen this habit. If the birds ever do this in Maine, it is rarely, for I have found them where acorns and beechnuts were plentiful, utterly disregarding these sources of food and engaged in their usual tactics of searching the bark and limbs. In late fall and winter they will, however, eat freely of the rotten apples left hanging on trees and will also eat the pulpy part of mountain ash berries. They will also partake of bits of meat and suet put out for the benefit of Chickadees and other small winter birds. More seldom I have known them to eat seed of pine, fir and maple. In spring I have seen them visit the holes excavated by the Yellow-bellied Woodpecker in apple and maple trees and eagerly sip the sap

from the latter, while they are frequently seen around the bleeding stumps of maple and birch trees which had been cut down the previous winter.

728. *Sitta canadensis* Linn. Red-breasted Nuthatch; Red-bellied Nuthatch; Canada Nuthatch.

Plumage of adult male: white line over eye; black line from eye to nape and top of head black; upper parts bluish gray; wings clove brown; middle tail feathers bluish gray, the outer ones black with white patches subterminally; throat white; under parts otherwise rufous to ochraceous buff. Plumage of adult female: very similar to male but with top of head and line through eye more bluish gray, owing to the black being veiled by this color. Immature plumage: very similar; above the feathers slightly edged with black and in general color not such a pure deep bluish gray above. Wing 2.70; tail 1.60; culmen 0.55.

Geog. Dist.—North America; breeding in the mountains from Virginia northward, and from northern Maine and Manitoba, northern New York and northern Michigan northward; wintering from the northern United States south to the Gulf of Mexico.

County Records.—Androscoggin; rare summer resident, (Johnson). Arostook; common summer resident, (Knight). Cumberland; common winter migrant, (Mead). Franklin; common, resident, (Richards). Hancock; common resident, both inland and on the wooded islands, (Knight). Kennebec; quite common summer resident, (Gardiner Branch). Knox; resident, (Rackliff). Oxford; common resident, breeds, (Nash). Penobscot; resident, breeds commonly, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common winter resident, a pair remained one summer, (Spinney). Somerset; common, not common summer resident, (Morrell); common summer resident, (Knight). Waldo; common summer resident, (Knight). Washington; abundant, breeds, (Boardman). York; quite common resident, (Adams).

In general this is a species of the Canadian fauna, found in the deeper woods of Maine as a common resident species, though less frequent in winter than at other seasons, owing both to a partial migratory movement and to the roving habits adopted by the scattered bands remaining. In southern Maine, outside of the breeding range, it is more frequently seen in fall, remaining through winter and early spring in smaller numbers. In fall and winter they sometimes come into the orchards and trees of the cities and towns, but even at these

seasons they prefer the woods, forming roving bands and groups with the Kinglets, Chickadees and their allies. Like the White-breasted Nuthatch the species in question seeks its food on the trunks and limbs of trees, assuming all kinds of postures and attitudes, head up or down, on top or under a limb and in general acting much the same.

I have quite good reasons for believing that they remain mated for more than one season and that mated birds remain in each others company all the year, rarely associating with others in flocks, while it is the young birds of the year, as yet unmated, that mingle in flocks with others of their kind as well as related species. Their food consists of about the same run of insects' eggs, insects and larvae as is eaten by the White-breasted species. They greatly relish the seeds of fir, spruce, and pine and in winter can generally be found feeding in a region where trees of these species have seeded abundantly the past season. They deftly pry open the scales of the cones, insert their bills and obtain the seed. Maple seed are sometimes eaten by them. They will also eat bits of rotten apple, suck sap from the bleeding stumps of trees, take their share of bits of suet or meat exposed and on a pinch eat seed of dock and other weeds which protrude above the snow.

At all seasons these birds are very noisy, their presence being denoted by frequent nasal calls of "ank, ank, ank, ank, ank" sometimes "yank, or yank-yank" or again "yeh, yeh, yeh, yeh, yeh" or "it, it, it, it, it, it" uttered seemingly in the same tantalizing manner with which a small boy often mocks a companion. The call uttered by the male in the breeding season is a more prolonged "yeait, yeait, yeait" repeated several times and answered by short notes from the female. During the nesting season the nest can often be located by tracing up these calls, and by carefully watching the bird uttering them.

The nest is placed in a hole which is nearly always excavated by the birds themselves in a dead stub. While almost

any kind of a dead stub may be sometimes used, as I have found nests in poplar, maple, beech, elm and birch stubs, the real popular site selected by these birds near Bangor is a balsam fir stub with the bark still adhering and the inner wood rotten and punky. When they have discovered such a site as this latter in a stub about six inches through at the bottom and about sixteen feet high, they are really happy, provided that this is in rather dense, deep evergreen woods. To begin operations a series of small holes are made in the bark so as to remove the central portion entire and leave a hole about an inch in diameter. Then both birds, working in brief spells, excavate a hole in the wood within, extending straight in about two inches and downward to a depth of five to eight or nine inches. When completed a mass of finely shredded fibrous inner bark is placed in the hole, and some nests are also warmly lined with feathers. Occasionally eggs are laid on the fine chips at the bottom, no nest being made.

I have observed Nuthatches working at a hole in late March which subsequent visits in April showed had not since been worked on, and in May they would resume work and finish the nest and lay in it. It is a rather common habit of theirs to work on a nest in the early spring and then leave it merely begun to return and complete it later on. I have known them to complete a nest from the very beginning and lay the first egg within a week, while again nests were worked on more or less constantly for two or three weeks before they ceased building and commenced to lay, while again it would be fully two months from the time the first work was done until the eggs were laid, but such nests were not worked on for many days at a time until finally real constant work was commenced a few days before they really intended to lay.

The nests in the balsam firs are built rather quicker than those in the harder, sounder kind of woods. The height of the nest entrance from the ground is exceeding variable, often only five to fifteen feet up, again fully seventy feet from the

ground in some tall, rotten stub which the least jar threatens to send crashing to the ground. In fact many of their nests are in stubs that will not bear climbing, though often readily reached from a sound neighboring tree. All the nests I have observed were well smeared around the entrance with fir pitch for a space of three or four inches, to which occasionally the feathers of the owners may be found adhering.

The eggs are four to eight in number, more often five or six, and they are white, more or less spotted with cinnamon, rufous brown and lavender. One type of eggs is rather evenly and finely dotted all over, another type is spotted toward the larger end, while still another type is heavily wreathed with blotches about the larger ends. In general the eggs can scarcely be told from those of the Chickadee.

A set in my collection taken at Orono, May 27, 1892, was found in a hole in a fir stub twenty feet from the ground. The only way to secure the eggs was by bending the stub toward me until it broke at the base, meanwhile supporting it on my shoulder, and gradually walking backward and lowering it. These eggs measure 0.60 x 0.49, 0.62 x 0.49, 0.61 x 0.48, 0.61 x 0.46, 0.58 x 0.49, 0.61 x 0.49, and contained large embryos. A nest found in a fir stub fifteen feet from the ground, May 25, 1896, contained five fresh eggs measuring 0.60 x 0.45, 0.62 x 0.48, 0.62 x 0.47, 0.62 x 0.48, 0.63 x 0.47. The diameter of the entrance was an inch, the diameter of the inside of the nest cavity was three inches and the depth four inches. The nest proper was composed of fine shredded bark and feathers.

The birds are always tame, remaining in the vicinity and uttering constant calls to each other as their nest is being examined. The female generally does the bulk of the incubating while the male talks to her from no great distance, frequently going to the nest with insect dainties with which he feeds her. I found that a smart rap on the stub would generally induce the female to peer out with a questioning air, but frequently

it takes several taps to induce her to fly away from the nest. They generally have eggs the last week of May and the first week of June, and if robbed will build again and lay, continuing until successful in rearing a brood. Though some observers have stated that a second brood was reared I am positive that such is not the case near Bangor, and regard belated sets of eggs found in late June or early July as due to the birds having been broken up in their previous attempts at nesting.

Subfamily PARINÆ. Titmice.

Genus *BÆOLOPHUS* Cabanis.

731. *Bæolophus bicolor* (Linn.). Tufted Titmouse.

Plumage: conspicuously crested; forehead black; dull gray above; lores, postocular region and under parts whitish; sides russet brown. Wing 3.15; tail 2.80; culmen 0.40.

Geog. Dist.—Eastern United States, west to the Plains; breeding from the Gulf States to northern New Jersey and southern Iowa; resident throughout its breeding range; casual in southern New England; accidental in Maine.

County Records.—Penobscot: a specimen in worn breeding plumage in the University of Maine collection is registered as among the 1890 accessions and was mounted by S. L. Crosby; while the locality given for this on the register is simply Maine, the late Prof. F. L. Harvey informed me that he remembered the circumstances of its capture very well, and was very sure it was shot near Orono by one of the students and brought to him in the flesh.

There is no reason to apprehend the occurrence of this species in Maine save as a mere accidental straggler. Its habits are as yet unknown to me and I can quote only from the observations of others. Chapman states that it is a bird of very general distribution in woodlands, its presence being readily detected by its notes. He gives its common call as a loud, clearly whistled "peto, peto, peto, peto, peto," while it also utters other whistled calls and a "de-de-de-de" which is louder and hoarser than the call of the Chickadee. The nests are generally built in natural cavities and deserted nests of Woodpeckers in dead trees and stubs, being composed of leaves, bark strips and moss, warmly lined with feathers and fur. A

set in my collection was taken at Mayfield, Kentucky, May 8, 1894, from a hole in an apple tree. These eggs are white, profusely speckled and spotted with reddish brown, and measure 0.60×0.45 , 0.71×0.50 , 0.67×0.50 , 0.68×0.52 , 0.69×0.52 , 0.66×0.49 . In general five to eight eggs are said to be laid.

Genus *PARUS* Linnæus.

735. *Parus atricapillus* Linn. Chickadee; Black-capped Chickadee.

Plumage: crown, nape and throat black; the breast and sides of the head and of the neck white; wings and tail dull slate gray, the feathers more or less margined with whitish; back mouse gray; belly and sides washed with pale buff. Wing 2.58; tail 2.58.

Geog. Dist.—Eastern North America, breeding from the Alleghany Mountains in North Carolina, and from southern Illinois and Pennsylvania northward; wintering throughout its range, and a few stragglers wandering southward in winter.

County Records.—Androscoggin; abundant resident, (Johnson). Aroostook; common resident throughout, (Knight). Cumberland; common resident, (Mead). Franklin; common resident, (Swain). Hancock; common resident, especially on the wooded islands, (Knight). Kennebec; abundant resident, (Gardiner Branch). Knox; resident, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common resident, (Knight). Piscataquis; common resident, (Homer). Sagadahoc; common resident, (Spinney). Somerset; common resident, (Morrell). Waldo; common resident, (Knight). Washington; common resident, (Boardman). York; common resident, (Adams).

Though one of the commonest and best known of our birds, and a resident species throughout the State, I hesitate at the task before me of attempting to delineate the life history of so versatile a species. A volume devoted to this species alone would not give space sufficient to tell what should be told, but I will attempt to briefly follow this tame, confiding, humorous, inquisitive, intelligent and versatile bird through the life of one year. Going into the woods on New Year's Day we will not proceed far before we hear "chick-a-dee-dee" or a "dee-dee-dee-dee-dee" or other variations of this call. By standing or crouching without motion and imitating the call or by making

a squeaking sound by sucking with the lips on one's hand, the Chickadees can be tolled nearer and nearer until they hop about in the trees and bushes only a few inches away, even exceptionally alighting on our heads or even on an outstretched and immovable hand. They remain in the vicinity, hopping from twig to twig, peering curiously to see what new and odd animal is imitating them, until finally satisfied they resume their way, flitting from bush to bush and tree to tree, peering into the crannies and picking up thousands of eggs of injurious insects from the twigs and bark.

Through the winter they exist in roving bands, usually by themselves, but occasionally associated with a few Hudsonian Chickadees, frequenting the wooded tracts of country, in the more sheltered situations, and often venturing into the shrub-
berry, trees and orchards of the city and country gardens. In these latter places they do good work ridding the trees of the eggs of insects as well as many insects which are found hibernating in the crevices and crannies of the bark. Among the insects' eggs eaten are thousands of eggs of the tent worm moth, canker worm, tussock moth and related injurious species, also eggs of various bark and scale lice. I have also seen Chickadees hover before and cling to the clapboards of barns and other buildings, industriously eating the various eggs and insects concealed there. As spring approaches they resort more and more to the woods, and here their sweet, clear whistled love note or mating song, "dee-dee, dee-dee," may be heard in late March and April. This consists of two clear notes uttered in about G followed by two more uttered in F, and though I have heard this call at other seasons it is uttered more frequently in the mating season and is primarily the love note.

In late April or early May they begin to excavate the nest. Usually some very rotten stub in the woods is selected, usually near the edge of the woods or near an open space or clearing, but sometimes in the low, deep woods. Occasionally they will nest in some natural cavity of an apple or other orchard tree,

in a hollow fence rail or crevice of a building, but this may be considered rather exceptional, as they prefer the woodlands. A very favorite situation selected near Bangor is a rotten white birch stub which is still covered by the tough white bark. A neat round hole is made through the bark and the cavity excavated in the wood to a depth of six to ten or twelve inches. Both birds work at this task and from a week to ten days is required to excavate the hole and three or four additional days to gather together the mass of feathers, moss, hair and cocoons which make up the nest proper. An egg is laid daily until the set of five to ten, usually six or seven eggs is completed. Both birds incubate and the eggs hatch in eleven days, occasionally requiring twelve or thirteen days for the last eggs to hatch. Incubation usually does not begin until all but the last egg or so of the set have been laid. The young are fed by both parents and leave the nest in thirteen to fourteen days. I feel sure that only one brood is reared here.

A typical nest found at Orono, May 18, 1898, contained seven fresh eggs which measure 0.59×0.46 , 0.60×0.47 , 0.59×0.47 , 0.58×0.45 , 0.60×0.47 , 0.62×0.47 , 0.58×0.47 . This nest was placed in a cavity eight and a half inches deep near the top of a rotten white birch stub, six and two-thirds feet from the ground. The diameter of the entrance was two and a quarter inches. The nest proper measured two inches in diameter by one inch deep inside, and was composed of bits of moss, spiders' cocoons, skunk, rabbit and squirrel hair, and a few feathers. The eggs are pure white, speckled with reddish brown most thickly about the larger end, though there are some specks about the smaller end. Other sets of eggs I have seen were quite varied in appearance, some being evenly speckled all over, others being wreathed about the larger end with fair sized blotches. In general fresh eggs may be found from the tenth to the last of May.

In addition to helping in the work of incubation the male is very attentive to the female, feeding her frequently while she

is incubating. He generally appears on the scene at the first sign of trouble, uttering excited "chick-a-dee-dees" and in other ways endeavors to call attention to himself. The female rarely leaves the nest until the stub in which it is situated has been rapped on or otherwise disturbed, so that practically the only way to discover a nest is by rapping hap-hazard on every stub at hand, or by watching until the male goes to feed the female, or by discovering the nest at the time when the birds are building. One to ten feet from the ground are about the extremes of height at which nests are situated, usually about six feet up.

As soon as the young can leave the nest the whole family take to roving through the woodlands, inspecting the various twigs and limbs of the forest trees for insects and eggs of insects. Occasionally they will descend to the ground to feed or will cling to the tree trunks to eat such tempting morsels as they may have spied, but the branches and twigs form their chief summer hunting grounds. They sometimes feed head downwards, or hang under a limb, but in an entirely different manner from the Nuthatches.

In late summer and fall they form roving bands, often associated with the Kinglets, Nuthatches and allied species. At such seasons I have occasionally found an impassioned band of Chickadees engaged in "mobbing" a Saw-whet Owl or more rarely an American Long-eared Owl, at which pastime they seem to take great delight, hopping about his owlship and passing excited "dee-dee's," "chick-a-dee-dee's" and other comments of like nature regarding his presence. At such times they have often uttered rasping excited calls which sounded much to my ears like "Qu'est-ce que c'est?" answered by another "Quelque chose." In fact some of their liquid excited gabblings remind me always of a crowd of French Canucks engaged in their favorite pastime of passing small gossip. And so as fall passes and winter comes the Chickadees roam in little bands through the snowy woodlands, their ranks now

and then decimated by a Shrike, Hawk or Owl, though usually the Shrike is the only enemy quick enough to get a chance at them.

740. *Parus hudsonicus* Forst. Hudsonian Chickadee; Hudsonian Titmouse.

Plumage; crown brownish gray, the back similar with a more ashy tinge to it; wings and tail slate gray, only slightly edged with whitish; sides washed with rufous; ear coverts, sides of neck, the breast and belly white; chin and throat black. Wing 2.52; tail 2.55.

Geog. Dist.—Northern North America, breeding from northern Maine northward; resident where found, a few rarely wandering southward to Massachusetts.

County Records.—Androscoggin; rare winter visitor, (Johnson). Aroostook; rare summer resident of the Woolastook Valley and near Crystal, probably elsewhere, (Knight); not uncommon at Fort Kent, (Norton, J. M. O. S. 1899, p. 7). Cumberland; rare, (Mead). Franklin; rare winter resident, (Richards); seen in summer on Mt. Abraham, (Sweet). Hancock; winter migrant, (Murch); breeds at least rarely, (Knight). Oxford; occurs at Upton, (Brewster, B. N. O. C. 3, p. 20). Penobscot; winter resident of variable abundance, usually rare, (Knight). Piscataquis; common winter visitor, (Homer); found nesting at Dover, (Ritchie, Auk 1905, p. 87). Somerset; common breeding bird between Northwest Carry and Hale Brook in late May, 1908, (Knight). Washington; not uncommon, a few breed, (Boardman).

The species in question is practically non migratory, but in fall and winter occurs in roving bands, ranging over the country and at such season a few rove into southern Maine and even into Massachusetts. In northern and eastern Maine they are not uncommon near our boundaries in winter, and a few remain to breed in the limited and local areas of the Hudsonian fauna which are scattered through northern and eastern Maine. In habits they do not greatly differ from the common Chickadee, though their call note is different.

Mr. Ritchie found the species nesting near Dover, Maine, and I have taken a very complete extract of his account of this species nesting there from the Auk, 1905, p. 85-87. He there writes as follows:—"There has been so little said or written in relation to the breeding of this species that the record of a nest with young discovered by the writer the present

season may be of some value to the working ornithologists. During a twelve years residence at Dover, Piscataquis County, I have occasionally during my rambles met this species, but the meetings have usually occurred during the late fall or winter seasons, and have been so infrequent as to merit a special record in my notes. Accordingly it was indeed a surprise to discover a pair engaged in the act of rearing a brood of young this season. The date was June twenty-first. I had spent the morning botanizing in a place locally known as Sangerville Bog, located due west from Dover Village, the nearest portion of the bog being about a mile distant. The boundary line between the towns of Dover and Sangerville passes directly through the morass, a portion lying in either town, but the "find" was located on the Dover side.

This bog is of the character of many others scattered through northern and central Maine, lying in a valley surrounded by hills of moderate height, the slopes of which are well wooded, principally with birch, beech and poplar. The swampy margin of the bog produced a belt of fir and cedar with a fair percentage of yellow birch and swamp maple, while the center of the bog consists of open areas, interspersed with clumps of hackmatack, locally known as juniper. The nest was located in the coniferous belt at the extreme edge of the swamp, about six rods from an opening where the growth had been cut away and is now occupied as a pasture. A portion of a dead cedar, nine inches in diameter and about ten feet in length, had fallen and stood leaning with a gentle incline against a birch, and in this stub about four feet from the ground the nest was located. The birds had apparently done but little excavating in solid wood; taking advantage of a decayed place in the side of the stub, had there begun their building operations. The opening at the entrance was irregular in shape, measuring about two by three inches, the cavity expanding with the descent until a depth of six inches was reached where the inside diameter was about four inches, and there the nest was placed.

It contained six young birds, well covered with dark feathers, which were probably about a week out of the shell, and they filled the nest so completely that it was a question how they would all be able to exist and reach maturity in these narrow quarters.

The old birds were engaged in feeding the young, and the fact of one having a woodland moth—species unknown—in its bill first led me to suspect a brood of nestlings might be near. Both birds were seen and positively identified through my glass at a distance of about thirty feet before the nest was discovered. While I was examining the nest, the bird with the moth in its bill, presumably the female, as she was the most fearless of the pair, flew to within seven or eight feet of my head and nearly on a level with it, showing the greatest anxiety and uttering piteous cries. Her call notes before I approached the nest were similar to the following syllables: "tswee-chee ya-a-a-ck" (emphasis on last syllable and with rising inflection) and were uttered at intervals of five or six seconds quite constantly. The male was apparently not as anxious as his mate, nor did I hear any note from him during my stay in the vicinity of near a half hour. I could not remain longer to study this interesting family, and after carefully marking the spot, returned home intending to return and secure material proof of the bird's identity, but business detained me and I was not able to visit the place again until July first, an absence of ten days, when I found the nest empty. From its appearance I had no doubt that the young brood had occupied it until within a day or so, and expected to find them near, but a search of the surrounding territory failed to discover any trace of them.

The stub containing the nest was secured and the nest lining examined, which proved to consist mainly of vegetable down from ferns and what appeared to be the fur of the northern hare or rabbit, nicely felted together. This record of *Parus hudsonicus* would appear to indicate a later season for nesting

than that occupied by *P. atricapillus*, as I discovered a flock of the latter containing both the old and the young birds, several days from the nest, feeding only a few rods from the spot where, snug in their tree, lay concealed the brood of young *hudsonicus* which appeared to be only about a week out of the shell. . . . During my rambles in this vicinity in the months of September and October, I found *hudsonicus* to be more abundant than during previous years, and on at least one occasion a flock containing five or six individuals was seen."

To supplement Mr. Ritchie's account I will briefly state that many years ago at Sunshine, on Deer Isle, I found a Chickadee's nest containing several well grown young, and noted at that time that they did not have black caps on their crowns, but supposed this was only the usual plumage of the common species at that age. This nest was discovered in late June. Some years later on, after I had become fully acquainted with the appearance of the nearly fledged nestlings of the Common Chickadee and learned that they always had a black crown I happened to discover in looking over my notes made at Deer Isle the facts noted regarding the young Chickadees found there, and the evidence that I had really found the young of the Hudsonian Chickadee seemed conclusive. A note regarding this was recorded by me in *The Oologist* several years ago.

In 1904 and 1905 I saw the Hudsonian Chickadees at Fort Kent and elsewhere in that vicinity in the Woolastook and Fish River valleys in July and August respectively, and though it was of course too late for them to be nesting, there seems no doubt to my mind that they breed in that region. Again in July, 1906, late in the month, I found them at Crystal in Caribou Bog in small family groups of six to eight, and feel positive that they must have been reared there.

In late May, 1908, I saw several pair between Northwest Carry and Hale Brook and found two nests which were completed and ready for eggs. The nests were situated in birch

stubs at heights of about six feet from the ground and very similarly built to nests of the common Chickadee. The Hudsonian Chickadee, however, has the habit of sitting on the stub where the nest is and calling its "dee-dee-jack," thus drawing attention to the nest, or at least this was the way my attention was called to the two nests before mentioned.

The nests and eggs in general are indistinguishable from those of the common Chickadee, and the food is practically identical.

Family SYLVIIDÆ. Warblers, Kinglets, Gnatcatchers.

Key to the species of SYLVIIDÆ.

- A. Crown with bright crest or patch of red or yellow and orange.
 - 1. Crown patch or crest ruby red. Ruby-crowned Kinglet, (male).
 - 2. Crown patch or crest yellow and orange. Golden-crowned Kinglet.
- B. Crown without red, yellow or orange patch or crest.
 - 1. Back bluish plumbeous gray; outer tail feathers white. Blue-gray Gnatcatcher.
 - 2. Back grayish olive green; no white in tail. Ruby-crowned Kinglet, (female and immature).

Subfamily REGULINÆ. Kinglets.

Genus REGULUS Cuvier.

748. *Regulus satrapa* Licht. Golden-crowned Kinglet.

Plumage of adult male: crown centrally orange, bordered by lemon yellow laterally, the yellow bordered by black; whitish line over eye and whitish across forehead; otherwise above olive green; wings and tail olive brown, edged with bright olive green; some of the greater wing coverts tipped with whitish; below in general dull grayish white. Plumage of adult female: the crown is always pale lemon yellow without the orange center of the male; otherwise the plumage is very similar to that of adult male. Immature plumage: the cap and lores are in general clove brown to dull black, but in early August the immature birds take on the yellow or orange crowns and become nearly indistinguishable from adults. Wing 2.12; tail 1.80; culmen 0.29.

Geog. Dist.—North America, breeding in the Alleghany Mountains south to South Carolina and in the Rocky Mountains to Mexico, and from the

northern states northward; wintering from the northern United States to Guatemala.

County Records. — Androscoggin; common winter resident, (Johnson). Aroostook; common resident, but less frequent in winter, (Knight). Cumberland; properly a summer resident, suspect a few remain through winter, abundant in migrations, (Brown, C. B. P. p. 5); common winter migrant, (Mead). Franklin; common migrant, (Swain); common resident, (Sweet). Hancock; common resident, (Knight). Kennebec; very rare winter resident, (Powers). Knox; resident, (Rackliff). Oxford; common, (Nash). Penobscot; common in summer, breeds, abundant in migrations, sporadic in winter, (Knight). Piscataquis; resident, (Whitman). Sagadahoc; migrant, common in fall of 1896, (Spinney). Somerset; common, a frequent summer resident, (Morrell); common summer resident of the northern wilds, (Knight). Waldo; common summer resident, frequent in fall and spring, fairly common in winter, (Knight). Washington; quite common, a few winter, rarely breeds, (Boardman). York; not common migrant, (Adams).

This is a generally distributed and common resident species throughout the State, and though most generally noticed in fall and spring there is not a county in the State in which careful search will not reveal the species at any time of the year, though in winter the species is harder to find because at that season they occur in small roving flocks and in the more sheltered, warmer localities where food is plentiful. At all seasons their chief preference is for the evergreen woods and groves. Pine, fir, spruce and hemlock woods, or mixed growth in which these trees predominate are their preference. Occasionally they venture into the orchards in fall and are fairly often found in white birch woods, but to be sure of finding them one must seek in the evergreens. Here they feed on the insects and insects' eggs carefully gleaned from the foliage and branches, while an occasional insect is sallied after and caught on the wing.

In the nesting season an occasional pair will nest in a small grove where there are scarcely a dozen trees of pine or other evergreen, but to be sure of finding them nesting they must be sought in the deeper more extensive woods. Here they might nest by the dozen unobserved and undetectable, were it not for the very characteristic song uttered by the male. He

accompanies the female as she is building, uttering constantly a shrill, characteristic song sounding much like "tsee, tsee, tsee, tsee, tsee, ti, ti, ti, ti, ti, ti, ti, ti, ti," which is answered by a "chipping" call by the female. Here and there in the tops of the higher trees they dodge, the female passing here and there, gathering material, and very closely followed by the male, both erecting their crests more or less frequently. Finally she goes to the nest, is there only a few seconds and leaves to gather more material. At this time the nest can be quite readily found by devoting sufficient time to search, aided by keen eyes and good field glasses. The female with her mouth full of material can be followed until she leaves it in the thick top of some tree, generally a spruce, though often either fir or hemlock, and more rarely a pine. When she has been seen to go several times with material to this same spot, the nest has been located. I have had no difficulty, given two or three hours time, in locating a nest in this manner during the last week of May or the first two weeks of June.

Occasionally nests are placed quite low down, for example the historic nest found near Bangor so many years ago which was placed only six feet from the ground in a fir tree. My experience has been that they are more frequently placed well up in the trees, and while many nests have been recorded from heights of thirty feet, a majority of those I have located or been present when they were located, in inland localities were nearer forty to fifty feet in elevation. On the densely wooded islands along the coast they place their nests lower down, not over twenty feet up, on an average.

The nests are in general pensile or semi-pensile. They are composed of green mosses, lichens, usnea, fine soft bark and rootlets, lined with feathers. Though sometimes on or against a big limb, they are more generally supported by several small twigs which are woven into the nest near the top of it. Though in general full sets of eggs cannot be expected until June fifteenth to twentieth, an occasional pair of birds must have fresh

eggs in late May as I have seen young Kinglets not more than two days out of the nest and barely able to fly as early as June twentieth. Eight to ten eggs are laid, and these are a muddy or creamy white, blotched, speckled or washed with wood brown and less often with pale lavender. The average measurement is about 0.56×0.45 .

That the birds are very touchy about having their home life studied into I can vouch for, as several nests I have found were deserted before eggs were laid in them. Nests found the first week in June which were climbed to a week later to observe details of construction were deserted, and nests which were left three weeks after they were found in order to insure their having full complements of eggs were visited even as late as June twentieth and found not to be quite ready for eggs and were never laid in. I can therefore put in the following "don'ts," which are vouched for in the light of sad experience. Don't climb to a Golden-crowned Kinglet's nest until at least two, better three weeks after you have discovered the birds building it, or don't climb to it until at least fourteen days after you know the birds have ceased to work on it. Don't climb to a Ruby-crowned Kinglet's nest without observing all the precautions given above. They are more particular than the Winter Wren about their nests and will desert them on the least suspicion that they have been looked at by a human being from the limbs of the tree in which the nests are, while the Winter Wren, as a rule, doesn't desert a nest unless it has actually been touched. An average Golden-crowned Kinglet's nest measures four inches in outside diameter, one and three-quarters inside diameter, three inches in depth outside and two inside.

749. *Regulus calendula* (Linn.). Ruby-crowned Kinglet.

Plumage of adult male: crown, with bright ruby red spot or crest which is more or less concealed; above grayish olive green, brightest on the rump and on the edgings of the wings and tail; wings and tail clove brown; wing coverts and tertiaries tipped with whitish or buffish; under parts olive buff,

browner on sides. Plumage of adult female: ruby red crown patch lacking, otherwise similar to male. Immature plumage: very similar to that of adult female. Wing 2.25; tail 1.80; culmen 0.29.

Geog. Dist. — North America; breeding in the Sierra Nevada and Rocky Mountains south to Arizona, and from the extreme northern United States northward: wintering from South Carolina to Mexico.

County Records. — Androscoggin; fairly common, (Johnson). Aroostook; rare near Fort Kent in summer, (Knight). Cumberland; common transient, (Brown, C. B. P. p. 5). Franklin; common migrant, (Richards). Hancock; common migrant, occasionally summer resident, (Knight). Kennebec; very rare migrant, (Dill). Knox; rare migrant, (Rackliff). Oxford; rare, (Nash). Penobscot; common migrant, rare summer resident, (Knight). Piscataquis; common migrant, (Homer). Sagadahoc; rare, one specimen, (Spinney). Somerset; rare, have seen it once when I was sure it was breeding, (Morrell); rare summer resident of northern region, (Knight). Waldo; common migrant, rare summer resident, (Knight). Washington; rare, may breed, (Boardman). York; not common migrant, (Adams).

Mr. Brown gives date of arrival near Portland as April nineteenth to the twenty-fifth, remaining until about May fifteenth and again in the fall as about October first. Near Bangor they generally arrive about April fourteenth to the twentieth, and the bulk have passed on by May eighteenth, a few remaining all summer. In the fall, the migration is on in September and all are gone by October nineteenth. There is no doubt of the species breeding in northern and eastern Maine, though the best proof I can give of this is a nest without eggs taken near Bangor, and observing the birds with young near Fort Kent, and the fact that they are present in mated pairs elsewhere in Maine in late June and early July.

On May 31, 1897, while collecting in a thick woods of mixed spruce and fir, my attention was attracted by the constantly occurring song of a Kinglet. I located the songster by aid of a pair of opera glasses and found he was accompanying his mate who was engaged in nest building. She sought suitable material in the immediate vicinity, and with her mouth filled with large pieces of moss which she took from the tree trunks, she would go to the top of a spruce tree near at hand and shortly afterward fly away to repeat the process. I climbed the tree and located the nest near the extremity of a limb, about

twenty-five feet from the ground, and well concealed from observation from below. It was then a mere foundation of mosses, evidently just commenced. The birds were somewhat shy, but I was unable to detect any yellow crown patch on either of them. I made subsequent visits and watched the actions of the birds, becoming fully satisfied that they were really Ruby-crowned Kinglets. On June fifteenth the nest was ready to be lined, and I did not again visit it until June twenty-fourth when it was found deserted, doubtless owing to my too close scrutiny on the previous visit.

The nest is now in my possession. It was situated near the end of a limb, about eight feet from the main trunk and about twenty-five feet from the ground. It was supported by a number of small twigs which drooped from the limb and was directly under the limb. It is composed of mosses of the various sorts that grow on tree trunks mixed with lichens of the genera, *Cladonia*, *Parmelia* and *Usnea*. Viewed from a distance of a few feet it looks like a green ball of moss. The interior is composed of *Usnea longissima*, closely interwoven and intimately mixed with feathers and small quantities of moss. The lining is not completed. The nest measures outside in depth four and inside three inches, while the outside diameter is three and the inside one and a half inches. A few days after taking the deserted nest I visited the same woods and heard the song of the male bird and got a glimpse of them, but failed to locate the nest they were doubtless at work on, and soon lost the birds entirely. This was about four miles from Orono in deep woods.

Besides the low lisping chatter which the birds utter more or less frequently, the male sings more or less constantly, especially while accompanying the female during the nesting season. The song is quite distinct from that of the Golden-crowned Kinglet, being a warbled series of notes ending always with a strongly emphasized "che-we-we, che-we-we, che-we-we." Occasionally they utter a harsh grating note. Their food is

gleaned from the foliage and branches, or occasionally an insect is taken in the air, or an individual will hover before some limb and take an insect from it. They eat the same general run of small insects and insects' eggs eaten by the Chickadee. They frequent the evergreen woods as a matter of choice. The eggs I have never seen, but they lay at least ten sometimes as I have seen a pair of old birds in early August near Fort Kent, accompanied by ten young not long out of the nest and still being fed by the parents. Davie gives the number of eggs as five to nine, states that they are dull whitish or pale buffy, faintly speckled with light brown, chiefly at the larger ends, or occasionally nearly immaculate. They are said to measure about 0.55×0.45 .

Subfamily POLIOPTINÆ. Gnatcatchers.

Genus POLIOPTILA Scater.

751. *Polioptila carulca* (Linn.). Blue-gray Gnatcatcher.

Plumage of adult male: forehead narrowly bordered by black; wings clove brown, the tertiaries broadly white edged; outer tail feathers white, grading gradually into the pure black middle ones; upper parts otherwise plumbeous bluish gray; below dull grayish white. Plumage of adult female: differs chiefly from male in lacking black border to the forehead. Immature plumage: drab to smoke gray above; otherwise very similar to female. Wing 2.07; tail 2.10; culmen 0.41.

Geog. Dist.—Eastern United States, northward to southern New York and southern New England; straggling to Massachusetts and Maine; breeding from the Gulf States to northern Illinois, southern Ontario and New Jersey; wintering from Florida southward.

County Records.—Cumberland; observed at Cape Elizabeth, August 29, 1880, (Brown, C. B. P. p. 5); observed at Cape Elizabeth, April 18, 1896, (Brown, Auk 13, p. 264).

This species is a mere casual straggler to Maine. Its habits I must quote entirely from observations of others. A nest and eggs in my collection were sent me by Mr. A. T. Wayne, who took them near Mount Pleasant, South Carolina, May 12, 1896. The nest was placed on the horizontal limb of a red oak tree, fifteen feet from the ground and ten feet from the

body of the tree. It is a beautifully constructed affair, composed of soft plant down, fine portions of the flowering panicles of *Agrostis*, and covered externally with small rounded fragments of lichens, fastened on with spiders' web, and lined internally with soft down. Its depth outside is two and three-quarters and inside one and a quarter inches, the diameter outside is two and three-quarters and inside one and a quarter inches. The five eggs measure 0.60 x 0.48, 0.61 x 0.49, 0.62 x 0.48, 0.59 x 0.47, 0.60 x 0.48. The eggs are bluish white, speckled and spotted with chestnut, rufous brown and umber. The nest viewed from below would look like a lichen covered knot on a limb.

Other observers have found nests at various heights from ten to fifty feet up in trees in woods. Both birds are stated to do their full share of building, which seems very probable indeed, as in California I found both the Black-tailed and Western Gnatcatchers to do their full share of work irrespective of sex.

The song of the Western Gnatcatchers, a mere variety of this species, is a rather nasal "twing-twing-twing-twing-a-ree-a-ree-aree," and I have no doubt that the song of this species under discussion is very similar, and that also like the former they utter a nasal, catlike mew. They are said to live largely if not entirely on insects and insects' eggs, taking many insects on the wing, which I have observed to be the case with the Western Gnatcatcher.

Family TURDIDÆ. Thrushes, Solitaires, Stonechats,
Bluebirds, etc.

Key to the species of TURDIDÆ.

- A. Back and tail with more or less azure blue. Bluebird.
- B. No azure blue on back or tail.
 - 1. Basal portion of the tail feathers white or tips of outer feathers white spotted.
 - §. Tail clove brown to blackish, the outer feathers white tipped.
American Robin.



WOOD THRUSH.

From *The Warbler*, by the kindness of Hon. John Lewis Childs.

- §§. Tail basally white, the feathers black tipped. Wheatear, (Hypothetical List).
2. Tail neither basally white nor white spotted at tips of outer feathers.
- §. Tail and upper tail coverts pale rufous, brighter than and distinctly contrasted in color to the olive brown back. Hermit Thrush.
- §§. Tail and upper tail coverts not brighter than back and not pale rufous.
- ?. Tail, rump and back about the same color, olive.
- a¹. Throat, breast, cheeks, space before eye, and eye ring a distinct cream buff color. Olive-backed Thrush.
- a². Throat, breast, cheeks, space before eye and eye ring white, very barely tinged with buff.
- b¹. Larger; wing over 3.75; tail over 2.95. Gray-cheeked Thrush.
- b². Smaller; wing under 3.75; tail under 2.95. Bicknell's Thrush, (Hypothetical List).
- ?. Tail, rump and back in general cinnamon brown.
- a¹. Sides distinctly spotted. Wood Thrush.
- a². Sides not distinctly spotted, merely washed with grayish.
- b¹. Light tawny brown above; chest creamy buff with narrow markings of brown which are scarcely darker than the upper parts. Wilson's Thrush.
- b². Russet olive above; chest very pale buff with broader markings of darker brown than the upper parts. Willow Thrush, (Hypothetical List).

Subfamily TURDINÆ. Thrushes.

Genus HYLOCICHLA Baird.

755. *Hylocichla mustelinus* (Gmel.). Wood Thrush; Song Thrush.

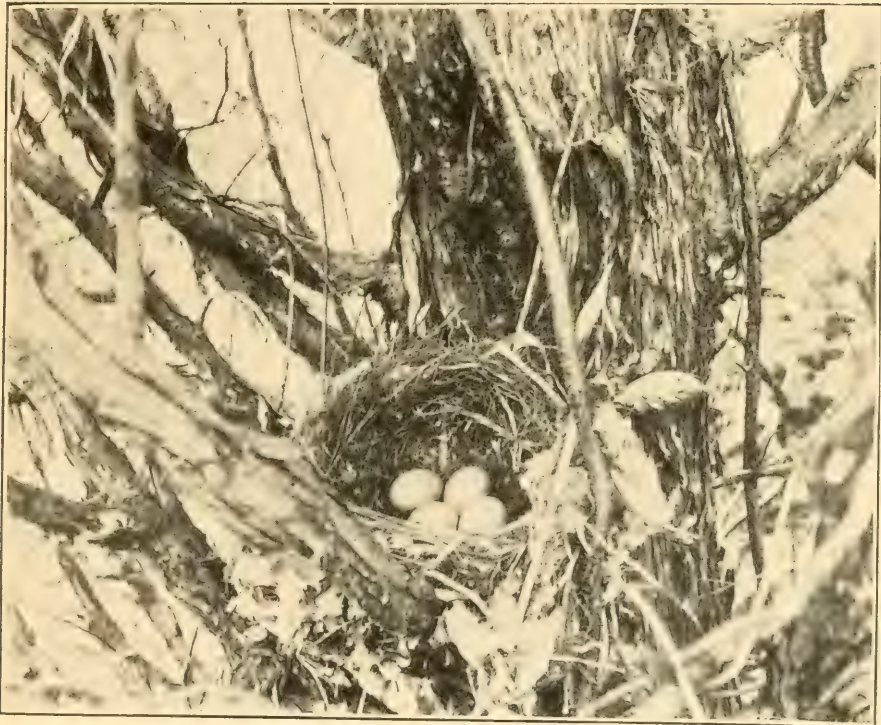
Plumage of adults: bright cinnamon brown above, brightest on the crown and changing to an olive tinge on the rump and tail; below white, heavily spotted with large round black spots except on throat and middle of belly. Immature plumage: above spotted on crown and nape and streaked on back with tawny olive; below white, tinged with buff on throat and sides which are heavily spotted as in adult and in other ways the plumage is practically similar to that of adults. Wing 4.35; tail 3.05; culmen 0.68.

Geog. Dist.—Eastern United States, west to the Plains; breeding from Virginia, Kentucky and Kansas northward to Minnesota, Vermont, Quebec, Ontario, Massachusetts and southern Michigan, casually in southern Maine; wintering in Cuba and Central America.

County Records.—Franklin; rare summer resident, have taken nest, eggs and bird, (Swain); at Avon, July 26, (Sweet, J. M. O. S. 1906, p. 97). Kennebec; given in *Smith's List* as having been taken at Vassalboro, (Smith, Forest & Stream). Oxford; have secured two sets of eggs during a period of eight years, (Nash). York; taken at Saco, (Goodale, Auk 2, p. 215).

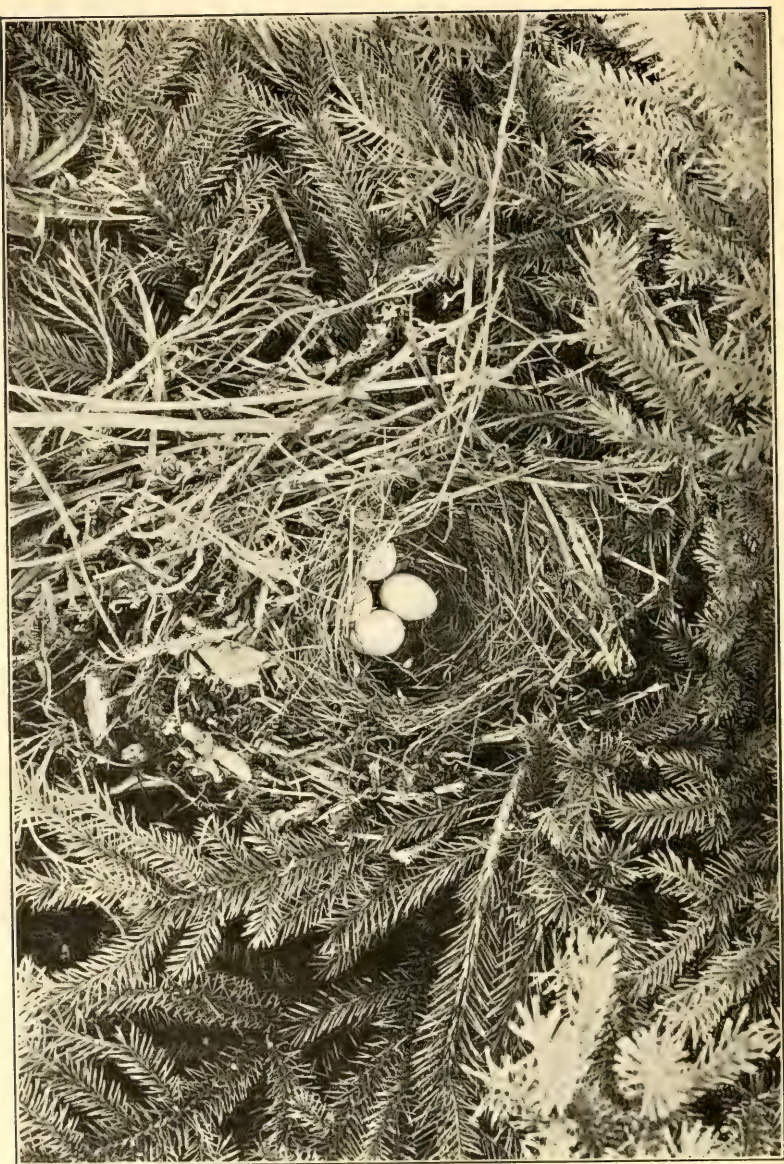
The Wood Thrush is a rare bird in Maine, essentially a bird of the Alleghanian fauna and confined to extreme southwestern Maine as a rare and *possibly* regular summer resident. Of its habits I can write nothing save through hearsay and by compiling the observations of others. The species is said to reach Massachusetts as early as May tenth and to remain until September fifteenth. They are said to occur in the shrubbery of private grounds as well as in the woods and groves, though being more distinctively a woodland bird. The call note is said to be a "pit-pit" rapidly repeated until it resembles the sound produced by striking large pebbles together, (Chapman, B. E. N. A. p. 396.) During the cooler hours of the day in June, July and even August they are said to mount to suitable perches on the higher branches of trees and there to sing a series of rich, liquid, metallic notes. When feeding and at other times than when singing, they are birds of more terrestrial habits, being more often on or near the ground.

The nests are placed in small saplings in woods and thickets usually not over twelve feet from the ground. A nest in my collection which was taken for me near Haverhill, Massachusetts, May 27, 1892, was placed in a beech tree in a damp piece of woods, at a height of twelve feet. It is composed outside of damp semi-rotten beech and other leaves and grass, within a shell of mud and rotten wood, lined with fine black rootlets. The depth outside is two and three-quarters and inside one and a half inches, the diameter outside is five and inside three inches. The eggs measure 0.96 x 0.70, 0.98 x 0.70, 0.97 x 0.73, 1.02 x 0.74. Three to four plain greenish blue eggs are laid which are on the average slightly lighter colored than those of the Robin. The food is said to consist largely of insects.



NEST AND EGGS OF THE WOOD THRUSH.

From the Warbler, by the kindness of Hon. John Lewis Childs.



NEST AND EGGS OF THE WILSON'S THRUSH.

Photograph by Ora Willis Knight.

756. *Hylocichla fuscescens* (Steph.). Wilson's Thrush; Veery; Tawny Thrush; Cheeury; Common Thrush; Nightingale.

Plumage of adults: above an uniform cinnamon brown, which by many would be called a deep russet or mummy brown; below white, strongly tinged with pale ochraceous buff on the sides of the throat and breast; center of the throat and the belly white; sides of throat and breast sparsely spotted with pale sepia wedge-shaped marks and a few fainter spots of the same on the breast; lores and ring around eye grayish white. Immature plumage: above deep umber brown, spotted with tawny olive and edged with dusky; otherwise very similar indeed to adults. Wing 3.90; tail 2.95; culmen 0.54.

Geog. Dist.—Eastern North America, breeding from northern Illinois, New Jersey and Pennsylvania to Manitoba, Ontario, Anticosta and Newfoundland and southward along the Alleghany Mountains to North Carolina; wintering in southern Florida sparingly, and more generally in Central America.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; breeds at Houlton, (Batchelder, B. N. O. C. 7, p. 108); southern Aroostook only, not seen by me north of Houlton, (Knight). Cumberland; common summer resident, (Brown, C. B. P. p. 3); rare, (Mead). Franklin; common summer resident, (Swain). Hancock; common summer resident inland, very rare and practically absent from the wooded islands, (Knight). Kennebec; common summer resident, (Gardiner Branch). Oxford; breeds commonly, (Nash). Penobscot; common summer resident of southern half of county, rare northward, (Knight). Piscataquis; three heard singing, (F. H. Allen). Sagadahoc; (Spratt). Somerset; common summer resident, (Morrell); not seen by me in the northern sections, (Knight). Waldo; common summer resident, (Knight). Washington; not uncommon summer resident, (Boardman). York; common summer resident, (Adams).

Though I find dates of arrival as early as April seventeenth at Livermore, April twenty-sixth at East Hebron and May first at Waterville, these are exceptionally early. Mr. Brown gives the date of arrival at Portland as May seventeenth to twenty-third, which more nearly accords with my Bangor date of about May sixteenth. Near Bangor, as in case of Mr. Brown's experience, nearly all are gone by the middle of September, September twentieth being my latest available date. I find recorded dates as late as October twelfth at Skowhegan and October twenty-first at East Hebron, which are exceptionally late for the species to remain. It is a common species in

southern Maine throughout the summer, and though ranging north to at least Houlton and east to the boundary of the State at Calais the species is found in constantly lessening abundance as we proceed north or east of Bangor.

Their favorite haunts are bushy thickets by the roadside and about the shores of ponds and streams, dense second growth beeches and birches, swampy alder thickets and hardwood or mixed woodlands. They are generally entirely absent from the thick, deep, dense evergreen woods, and I have failed to find them on the wooded islands along the coast.

The male sings (if you can call it singing) very frequently at various times during the day and even occasionally at various hours of the night, being especially given to music at twilight. The song is a harsh, churning, grating, grinding "fe-r-r-u-y," repeated several times in succession. I have seen this song written "cheéury, cheéury, cheéury, cheéury, cheéury, cheéury," but it is really hard to reduce to writing, though once heard it will always be remembered as analagous to the crushing, grating, grinding sound produced by the cogwork of some kinds of machinery. The call note is a clearer and more pleasing sound, a clear whistled "wheeu." These notes are generally uttered from a bush, but occasionally the Veery feels called upon to mount into a tree and utter a mixed song composed of a medley of embryonic trills, whistled notes and with the sound "cack" interspersed in a harsh tone. Other call notes are "chip" and "chit."

The nests are never situated on the ground as far as my experience goes, though one which I have found in the thick branches of a shrubby hemlock bush was nearly resting on the moss of a hummock in the thick woods. This nest was found in the thick woods near Palmyra, June 6, 1897. It was composed of dry maple leaves, beech leaves, spruce twigs, roots and stems, lined with finer roots and petioles of leaves. It measures three inches in depth outside by one and a quarter inside, while the diameter outside is four and three quarters and

inside three inches. The eggs are plain pale greenish blue and measure 0.84×0.65 , 0.86×0.63 , 0.84×0.63 , 0.81×0.61 . Three to five, more often four eggs are laid. The nests are often placed on top of the stub of a small tree around which the sprouts have started at heights of not over six feet from the ground. Other nests are placed in small evergreen bushes, in low alders and on dead stumps, in general two or three feet from the ground.

Nest building begins in late May, and in general it takes from a week to ten days to complete a nest. Full sets of eggs may be found at varying dates, usually the seventh to the tenth of June, rarely earlier than this and sometimes as late as the first of July. Though second broods have been recorded as being reared by this species, I have reasons for believing that only one brood is reared in Maine, and the so called second broods are really belated sets laid by birds which for some reason or other had not previously reared young that season.

When feeding the birds are almost entirely terrestrial, scratching and probing among the dead leaves and decaying vegetation on the ground. Here they find beetles, worms, grubs, ants, flies and a variety of similar insects which they subsist upon. Very rarely indeed in late summer they will eat a few dogwood berries, occasionally a few blackberries. It is quite probable that they eat a greater range of wild berries, though I have no evidence that they eat anything of this nature save that enumerated.

757. *Hylocichla aliciae* (Baird.). Gray-cheeked Thrush; Alice's Thrush; Arctic Thrush.

Plumage of adults: uniform olive above; eye ring whitish; lores grayish; sides of throat and breast *faintly* tinged with cream buff; middle of throat and middle of belly white; breast and throat spotted with black; sides brownish gray. Immature plumage: in general differs from that of adults in being with buffy white linear shaft streaks to the feathers. Wing 4.07; tail 3.00; culmen 0.55.

Geog. Dist.—North America, breeding from Labrador northwestward to Alaska; migrating southward through eastern North America; wintering in Central America.

County Records.—Cumberland; uncommon transient, (Brown, C. B. P. p.3). Penobscot; probably regular transient near Bangor in spring at least, but rare or hard to find, owing to the limited time it is with us, (Knight).

This species should be recorded from many places throughout the State, as it must occur more generally than the records show, though at best it is probably a rare bird with us. Mr. Brown has stated that near Portland the period of occurrence is the middle of May for two weeks and from the middle to the last of September. It has been taken near Bangor between May twentieth and twenty-fifth, and probably occurs also in fall, but owing to the very close resemblance to the Olive-backed Thrush may well pass unnoticed unless a systematic campaign is waged against the Thrushes with the sole purpose of detecting the present species and the Willow and Bicknell's Thrushes as well.

In migration the species occurs associated with the Olive-backed Thrush to a greater or less degree and can only be distinguished with certainty by actually having the bird in hand. The food and general habits are probably quite similar. The Gray-cheeked Thrush is said to nest in the branches of low trees, from two to seven feet from the ground, building a nest of leaves, sedges, stems and dry grasses, lined with fine grasses and strips of bark. The eggs are greenish blue, marked faintly over the surface with reddish brown. Three or four eggs are said to be laid and they measure about 0.91 x 0.71. Occasionally nests are said to be placed on the ground. Sets in various collections come from Mackenzie river, Anderson River, Alaska and Labrador.

✓ 758a. *Hylocichla ustulata swainsonii* (Cab.). Olive-backed Thrush; Swainson's Thrush; Flycatching Thrush; Mosquito Thrush.

Plumage of adults: above uniform olive; superciliary stripe, lores, whole throat and upper breast rich cream or ochraceous buff; the breast and sides

of throat with wedge-shaped to rounded spots of clove brown; sides washed with olive gray; lower breast and belly white. Immature plumage: similar to adults but the feathers above with linear shaft streaks or terminal spots of buff; below rather more heavily spotted than in adults. Wing 3.95; tail 2.86; culmen 0.53.

Geog. Dist.—Eastern North America, breeding in the Alleghany Mountains of Pennsylvania and from northern New England, northern Michigan westward to the Upper Columbia River and East Humboldt mountains, northward to Alaska and Labrador; wintering in Cuba, Guatemala, Nicaragua, Colombia, Ecuador and Peru; casual in Bermuda.

County Records.—Androscoggin; rare summer resident, (Johnson). Aroostook; common summer resident, and I think the commonest Thrush in the county, (Knight). Cumberland; rare migrant, (Mead). Franklin; rare summer resident, (Richards). Hancock; common summer resident, (Knight). Kennebec; very rare summer resident, (Robbins). Knox; summer, (Rackliff). Oxford; breeds rarely, (Nash). Penobscot; common summer resident locally in southern sections, the commonest Thrush northward, (Knight). Piscataquis; common summer resident, (Homer). Somerset; nest with four young at Pittsfield, June 11, 1899, (Morrell, J. M. O. S. 1899, p. 28); common summer resident of northern sections, (Knight). Waldo; common locally as summer resident, (Knight). Washington; not common summer resident, (Boardman); common in western sections, (Knight).

As a migrant this species occurs in southwestern Maine quite commonly and regularly, Mr. Brown giving the times of its occurrence near Portland as the second week of May for a few days, and from about August eighth to late September. I find it recorded as seen at Waterville as early as May sixth, while the average date of arrival at Bangor is nearer May fifteenth. Occasional individuals remain near Bangor exceptionally until October eleventh, but the bulk have gone in late September.

As a summer resident this is particularly a bird of the Canadian fauna, and in the wilds of northern Maine it is practically the commonest of the Thrush tribe, exceeding even the Robin in numbers in the deep, dense woods which it loves to frequent. Even near Bangor, which geographically is not many miles from being the center of the State, the Olive-backed Thrush is a common summer resident in the deep woods, though here much outnumbered by the Robin in point of numbers, but occurring in nearly equal numbers with the

Wilson's and Hermit Thrushes, each however restricted to territory which does not interfere to any great extent with that occupied by the other, these latter remarks only applying to the region about Bangor.

In migration the Olive-backed Thrush is rather a silent, secretive bird, passing through the shrubbery, thickets and woods, feeding on the ground or in trees, and often catching insects while on the wing. At such times I have heard them utter a cry much like that of the Junco, "chicky-sit" or sometimes a "chick" or a "pé-éep" or a "whit." In the breeding season they utter a "puck" quite frequently, and while this seems to serve as a note of alarm or distress, it is also uttered at times when there seems to be no cause for alarm. The male sings rather constantly through the spring and summer, uttering snatches of song at almost any time of day, though late in the afternoon and during twilight they seemingly sing most frequently. Generally they perch well up in the branches of trees while singing, rarely singing while lower down or on the ground. Their song and "puck" call are both quite distinctive and serve to distinguish them from the Hermit Thrush. The song of the Olive-backed Thrush is ringing, with a slight tinge of harshness not noticeable in the Hermit's song, and the song is uttered more hurriedly and with far less deliberation and pausing to give effect to the notes. For other notes and comparisons of the two, read what is written under the Hermit Thrush.

As far as I am aware, the Olive-backed Thrush always nests in woods which are entirely or predominatingly evergreen, placing the nest at various heights, rarely as low as three feet, more often at elevations of ten to fifteen, and sometimes even thirty feet from the ground. Spruce, fir, hemlock and pine trees are selected as nesting sites, but ninety nests are placed in spruce or fir to ten in other trees. Only once, at Katahdin Iron Works, did I ever see a nest in a hard wood tree, and this was in a sapling maple which grew into and was surrounded by a spruce,

so that for all practical purposes the birds might have assumed that the tree was a spruce.

The nests are compact, rather well made and neatly cupped. One taken at Lincoln, June 8, 1897, is composed outwardly of spruce twigs, grass leaves, dead fern stipes, fine usnea, lined with skeletonized leaves, fern stipes, black rootlets and usnea. This nest measures four inches in depth outside by one and three-quarters inside, the outside diameter is six and the inside diameter two and a half inches. The eggs measure 0.86×0.64 , 0.85×0.62 , 0.87×0.65 , 0.86×0.64 , and are greenish blue, more or less spotted with cinnamon brown or rufous. Though quite freely spotted over the entire surface, there is a general tendency for the spots to be thicker around the crown of the egg. Three to five, more often four eggs are laid.

The nests in general have a characteristic appearance and resemble one another in appearance, and nests of the western variety, *Hylocichla ustulata*, in my collection from California are practically identical with those from Maine of the *H. u. swainsonii*. Though full sets of eggs may be found in Maine as early as June sixth, the more usual date is a week or ten days later, and it is not indeed unusual to find fresh eggs in early July. I am inclined to believe, however, that only one brood is reared.

In food these birds are to all intents and purposes insectivorous, for while rarely I have known them to eat a few dogwood berries in fall, they seemingly prefer insects when obtainable. They feed on the ground among the leaves, eating beetles, worms, ants, and similar ground insects, while they also pick various insects from the limbs and foliage of the evergreen trees they frequent. I have known them frequently to catch moths, flies and mosquitoes while on the wing, and locally applied names of northern Maine are Mosquito Thrush or Fly-catching Thrush.

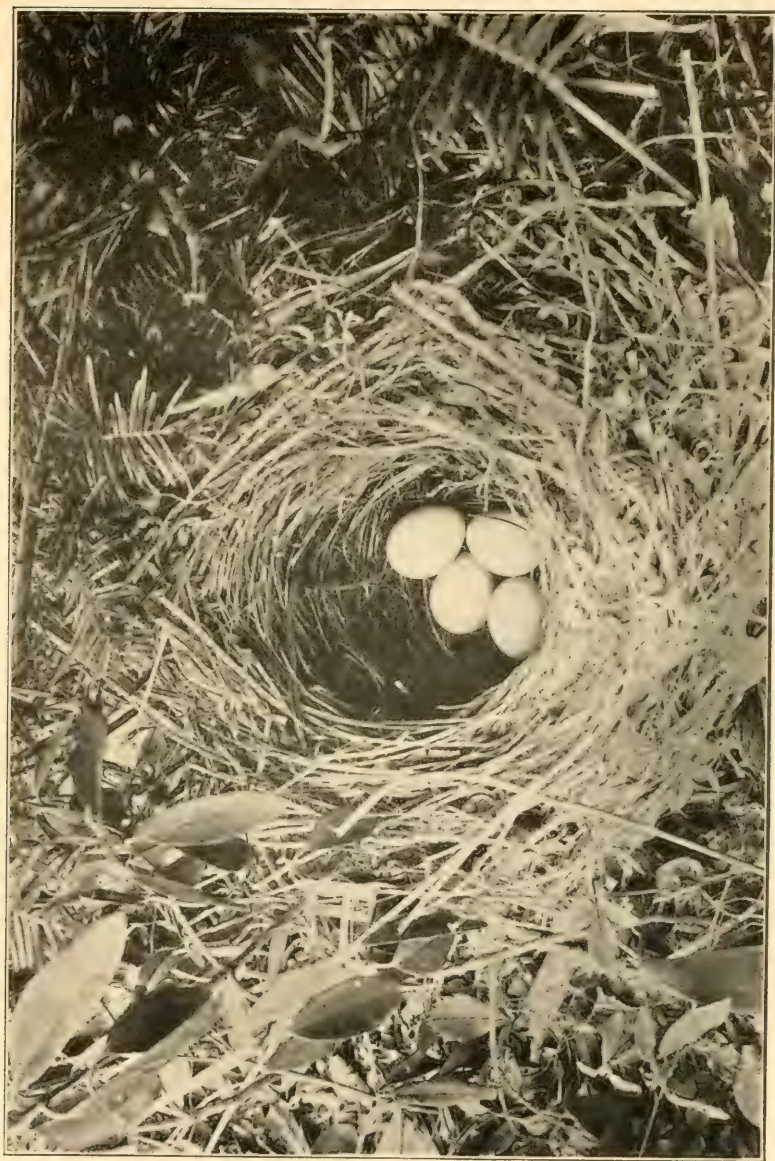
759b. *Hylocichla guttata pallasii* (Cab.). Hermit Thrush; Swamp Robin; Woodchuck; Swamp Thrush; Ground Swamp Robin.

Plumage of adults: above on head and back olive brown to olive-tinged mummy brown; tail and rump pale rufous, contrasted in color to the back; below white, tinged with buff on throat and faintly on the breast; sides of the throat with wedge-shaped black spots; breast with more rounded, less distinct blackish spots; ring around eye pale buff, lores black; sides olive gray; middle of belly white. Immature plumage: similar to that of adults, but spotted above everywhere in juvenal plumage with large buffy white spots, bordered by black; more heavily spotted below. Wing 3.60; tail 2.80; culmen 0.56.

Geog. Dist.—Eastern North America, breeding from the Alleghany Mountains in Pennsylvania northward in the mountains, and from Massachusetts and northern Michigan northward; wintering from Illinois and southern New England, possibly from Maine, to the Gulf States.

County Records.—Androscoggin; fairly common summer resident, (Johnson). Aroostook; summer resident of the bogs and swamps, not common or perhaps more local northward, common in southern sections, (Knight). Cumberland; common summer resident, (Brown, C. B. P. p. 3); common summer resident, (Mead). Franklin; common summer resident, (Swain). Hancock; common local summer resident, (Knight). Kennebec; common summer resident, (Gardiner Branch). Knox; summer, (Rackliff). Oxford; breeds commonly, (Nash). Penobscot; common summer resident in southern sections, somewhat more local northward, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; not very common summer resident, (Morrell); locally common northward, but rare or absent from many densely wooded regions of the north, (Knight). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman). York; (Adams).

In general this species arrives in Maine about the middle of April. I have seen individuals near Bangor as early as April sixth, more often about the middle of the month, and very seldom indeed in belated seasons individuals have not arrived until even May sixth, while records for other sections of the State show about the same range of variation. In the fall, migration begins in September, lingerers are very frequent up to October thirtieth, and very exceptionally into November. Mr. Brownson records one at Cape Elizabeth, December 25, 1904, which might lead to the inference that this species winters there along with the Myrtle Warblers and the Robins.



NEST AND EGGS OF THE HERMIT THRUSH.

Photograph by Ora Willis Knight.]

In migration the Hermit Thrushes may be found in the woods, wayside thickets, and even in the city gardens, scratching on the ground among the leaves or flying from bush to bush and tree to tree. At such times they utter a "chuck" and for many years of my early boyhood days the only name we had for this bird was "Woodchuck," a name significant of its habitat and its call. It was therefore with some little pleasure that in southern California I found the boys applying the same name to the western subspecies of the Hermit Thrush (probably the Dwarf Hermit Thrush) which occurred there commonly in winter. The "*chuck*" is indeed the characteristic call of the Hermit Thrush and its subspecies, the "*puk*" of the Olive-backed being the nearest approach to this call by the other Thrushes. When uttering this "*chuck*" they usually flirt or lift their tails slightly and partially droop their wings, their general bearing being otherwise proudly erect. This erect attitude, however, the flirting of the tail, and the drooping of the wings may be said to be a general family characteristic of our Thrushes and of the Robin, though in my opinion the habit is most fully developed in the Hermit Thrush.

Rarely the Hermit is a flycatcher, taking its prey on the wing, but more preferably feeding on the ground among the leaves and moss, where it finds beetles, ants, grubs and worms of various sorts. Occasionally they eat a few dogwood and arrowwood berries and bunchberries, but their diet save in fall may be said to consist almost entirely of insects.

While in May the flute-like song of the male may be heard rising on the wings of the wind, it is in June when the song period is at its height, and there is little abatement of singing through July, and even in August the song may be frequently heard. I have heard the song arising from the midst of the mossy bogs of northern Maine, from the more open stretches of wood and bog about Bangor, from the swampy woods to the rear of the University of Maine, and always with pleasure at being allowed to live and to listen to the carol, but never has

the effect seemed quite as pleasing as when listened to under the conditions to be described. Imagine if you can a scene in among the islands of Penobscot Bay at sunset. It is the last of June and a party of pleasure seekers are preparing their supper on a small schooner which is becalmed with the sails idly flapping, and not a breath of air stirs the surface of the water. Wooded islands dot the bay, one only a few hundred feet away, others more distant, and the wooded mainland perhaps two miles away. From the island near at hand arises the carolling of the Hermit Thrush, answered by another not far away, here arises the voice of the Olive-backed, likewise answered by the Hermit's voice or by that of his own species, and the song is answered and re-answered by the voices of other choristers from islands more distant and yet more distant, and even from the mainland far away the carols are quite plainly heard. Sound travels far over the waters in a calm, softened by distance and the songs of these two species of Thrush are listened to by all our party with feelings of pleasure and something deeper than mere pleasure, and even after darkness has settled over the scene the songs of the birds were heard until finally a breeze arose and took us on our way. Several times since I have had the pleasure of hearing the songs of these birds under similar conditions and always with the same feelings.

Generally the song is repeated over two or three times in a higher pitched tone each time, often ending with a break as if the songster had tried to reach a note beyond his range. The song of the Hermit Thrush is uttered deliberately, a slight pause between each drawn out note, as if for effect, and with a range of higher and lower modulations, and in a far sweeter, purer, more flute-like tone than is the song of the Olive-backed Thrush, and yet I am free to confess that occasionally I hear a song which I hesitate to refer to one species or the other. My experience has been that the Hermit practically always sings from the ground or from a low bush, while the Olive-back sings from the trees, generally from a perch quite well up.

Nests of the Hermit Thrush are always built on the ground so far as my experience goes. A very favorite location for them is at the foot of some small bush on a tussock or mossy hummock in the midst of the extensive, open, mossy sphagnum and hackmatack bogs of central and northern Maine. In northern Maine the distribution of the species is rather local in the sense that they are common in such open boggy expanses and rare or absent from the thick, deep, dense evergreen woods save where there are locally more open stretches about some pond or lake. About Bangor and elsewhere in central Maine the Hermit also nests in the more open swampy tracts of woods as well as in the second growth birches and beeches, frequenting in general such tracts of thicket and woodland where the fragrant *Arbutus* grows, and here nesting on the ground and at the foot of some small bush on a hummock.

The nesting season is subject to considerable variation, for very rarely I have found full complements of eggs as early as May first, though the more usual date for eggs is from May seventeenth to June tenth, and very exceptionally I have found eggs in July. Mr. Mead records a nest found near Bridgton, July 14, 1899, which contained three eggs. In spite of this great diversity of dates I am inclined to believe that only one brood of young is reared as a rule, though sets of eggs found as late as July may doubtless be instances where a second brood was being reared.

A nest in my possession was found near the University of Maine, May 17, 1898. It was placed on the ground on a slightly mossy hummock, on the southwesterly side of a low fir bush, in a low shrubby second growth in slightly swampy land. The nest was composed of dry culms and leaves of grass, stipes and dried fronds of small ferns, and lined with pine needles and small fine black roots. It measures three inches in depth outside by two inside, the diameter outside is five and inside two and a half inches.

The eggs measure 0.87 x 0.66, 0.86 x 0.66, 0.85 x 0.67,

0.85 x 0.66. In general four eggs are laid, sometimes only three and very rarely five. They are plain greenish blue in color.

The parent bird sits very closely and the nests are usually only discovered by flushing the sitting bird from almost under foot. She remains in the vicinity uttering a few plaintive whistled calls, with now and then a "chuck" interspersed. The male soon comes into the vicinity and adds his calls, but he is more wary and does not venture near the scene.

While the inner home life of these birds has not been satisfactorily revealed to me, I know that it takes from a week to ten days to build the nest and feel positive that I have only observed one bird working at nest construction, presumably the female, and as far as my observations go the female only incubates. Indeed I am not able to show that the male has any especial interest in working out family affairs, but if I have wronged him he has my sincere apologies. The incubation period is thirteen days, and the young leave the nest in fourteen to fifteen days after being hatched.

Genus MERULA Leach.

761. *Merula migratoria* (Linn.). American Robin; Cock Robin; Robin Redbreast.

Plumage of adult male: sides of head black; top of head dull black, more or less slightly veiled with olive brown; white spot above eye; above grayish olive brown, slightly lighter on edges of the wings; tail almost black, the outer feathers white spotted at tips; throat white, heavily streaked with black; breast, sides and belly tawny or rufous, becoming white at middle of the belly, and in fall and winter the feathers all more or less white tipped. Plumage of adult female: in general very similar to that of the male and sometimes indistinguishable, but usually lighter colored on the back and tail, with less distinct or extensive black on the crown, and with fewer, less heavy black streaks on the throat, so that in a mated pair of birds it is usually easy to tell which is male and which is female. Immature plumage: crown clove brown with whitish shaft streaks; back and wing coverts mouse gray, the feathers with streaks of wood brown, edged with dull black; rump barred with dusky; below tawny ochraceous, streaked on sides of chin and spotted

on throat, breast and abdomen with black; chin and middle of belly white. Wing 5.05; tail 4.20; culmen 0.88.

Geog. Dist.—Eastern North America, west to the Rocky Mountains and including eastern Mexico and Alaska; breeding from the Southern States northward to the Arctic coast; wintering from southern Canada, New Brunswick and Maine southward.

County Records.—Androscoggin; abundant summer resident, (Johnson). Aroostook; common summer resident in the more settled districts, rather rare in the thicker woods, and not very common in the Woolastook Valley, (Knight). Cumberland; common summer resident, (Mead); seen at Cape Elizabeth and Portland constantly in winter of 1904 and early in 1905, also winter of 1906-1907, (Brownson, J. M. O. S. 1904, p. 50, *ibid.* 1905, p. 28, 1907, p. 28). Franklin; common summer resident, (Richards). Hancock; common summer resident, (Murch). Kennebec; abundant summer resident, (Gardiner Branch). Knox; summer resident, (Rackliff). Lincoln; a flock of eight seen January 23 and a flock of nine January 24, 1905, near Damariscotta, (David, J. M. O. S. 1906, p. 28). Penobscot; common to abundant in southern sections, common northward save in the deeper woods, from April to November, (Knight); one observed in Bangor several times in January, February and March, 1907, (Elmer F. Cobb); one seen and heard singing March 9, 1908, near my home in Bangor, (Mrs. O. W. Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; common summer resident, (Morrell); rare in many portions of the northern wilderness in the deeper woods, (Knight); wintering at Starks and Skowhegan in 1904-1905, (Swain, J. M. O. S. 1905, p. 30). Waldo; common summer resident, (Knight). Washington; abundant summer resident, (Boardman); two seen near Lubec in December, 1905, not as plentiful as in previous winters, (Clark). York; formerly abundant summer resident, wintered in 1888 and 1889, only two nests seen in 1896, (Adams); a few wintered in 1898, intimately associated with several Flickers in a sheltered valley among the pines near the river at Eliot, (W. L. Fernald).

As there have been very frequent records of the Robin wintering in Maine which were really cases of mistaken identity in which the Pine Grosbeaks figured, it has been deemed advisable to admit only such winter records of the Robin as were furnished by observers who were positively known to have been absolutely unmistakable in their observations, and such records included above show that the Robin probably winters regularly along the coast in limited numbers. Elsewhere inland it appears to be only a very rare winter straggler.

In general the migrants arrive from the south in full force about March thirteenth to April eighth in the vicinity of

Bangor, and though lingerers stay longer, even through winter very exceptionally, most of the species have left the lower Penobscot Valley by October fifteenth, a few stragglers being found through November.

As a summer resident the Robin is a common bird in the settled farming districts of Maine as well as in the towns and cities, and along the natural waterways. It is rather rare in the thick deep woods and seemingly entirely absent from some wooded regions, and also somewhat less frequent on the wooded islands of the coast. We may therefore say that in Maine it is a bird that tends to love the neighborhood of settlements and civilized communities, found in city gardens and parks, by the country roadsides and brooksides, along the waterways and in the small strips of woodland and groves surrounded by cultivated lands. These are their summer resorts, but the advent of fall brings them to resort to the woods in flocks, and the few that winter as a rule prefer the deep, thick, sheltered woods.

In spring near Bangor the first day of their arrival from the south only one or possibly two Robins are generally seen, often first heard, uttering the characteristic "wicky, wicky, wicky" or "chirp, chirp, chirpchirp" or perhaps perched high up in the top of a leafless elm singing "cheer-up, cheer-up, cheer-up." The next day generally more are seen and then they come in numbers, appearing in loosely scattered flocks, flying from top to top of the leafless trees, and the air soon is full of their cries and song. Generally the "cheer-up" is the first and only song they utter in the spring, and it is not until well along in the latter part of the spring that they branch off into the well known "rain song." If the lawns happen to be bare of snow they descend and hunt for such early worms or insects as may be available, but I sadly fear that many go hungry for some days after their arrival, especially if a late flurry of snow covers the ground for several days, but if they are fortunate

enough to find rotten apples or mountain ash berries adhering to any trees they speedily engage in a feast on these.

I fully believe that most Robins are mated on their arrival here, as generally they seem to locate by pairs in certain localities immediately upon their arrival, and there is no doubt either in my mind that many return to the very same localities where they lived the previous summer. This of course is hard to prove, but anybody who has studied the Robins about home from season to season, and listened to their songs, which vary much with individuals, will feel assured that the same Robins do return.

Soon after locating they begin nest building, and by April fifteenth the pioneers sometimes have full complements of eggs, though this date is exceptionally early. Either the migration continues through April into May, or else some individuals are slower about pairing or beginning nest building, for fresh eggs of what is most certainly the first brood are even found as late as the first week in June under conditions which indicate that the birds had not previously been disturbed. At any rate for some cause the season of laying is considerably protracted so that by the time some birds are just beginning to feed the young of their first brood others are incubating eggs of the second brood, and so things continue until some Robins are hatching their third brood while others are only hatching their second brood. In general I believe that the first eggs of the second brood are not laid until June fifteenth and from then to the middle of July, while only a partial third brood is reared, eggs for which are laid in late July or early August.

I have known of a nest being completed and the first egg laid in six days from the time when it was commenced, while other nests have required even up to twenty days from time of beginning to completion, but the longer time required was due to a spell of prolonged rainy weather. An egg is usually laid each day until the set of three to five, exceptionally six, and more usually four eggs have been laid. The bird usually

begins to incubate with the first egg, and one parent or the other is on the nest nearly all the time. In one case under observation where there were four eggs, incubation began the first day, an egg was laid each day, the eggs were left only for a few minutes at a time until the eleventh day when the birds remained on the nest constantly until the fourteenth day when the first egg hatched. All four eggs were hatched by the evening of the fifteenth day, but it is evident that while the first egg laid hatched in fourteen days from the time it was laid, the last egg of the set laid must have hatched in only a little over eleven days. It seems to be an unvarying rule that the last egg of a set laid hatches in fewer days than the first one in cases where incubation is commenced when the first egg is laid.

The male bird renders some aid toward nest building, but the female certainly does most of the work. The male also takes short turns at incubating, more often helping in this work towards the end of the incubation period. He faithfully tends out on the young and has much to do in taking charge of, or perhaps I had better put it weaning them, while the female is already incubating the second set. The young are in the nest about eighteen days on the average. The parents feed them frequently through the day, bringing them worms, beetles and other insect food and carefully carrying away the excrement in their bills. There seems no doubt that in some cases the Robins actually eat the excrement of their young, as I have seen a Robin take the fresh excrement in its bill and seemingly swallow it and remain on the nest covering the young for over half an hour.

The nests are quite variously situated, though always very similar in construction and appearance. In the city streets the nests are usually saddled on horizontal branches of elms and maples, sometimes forty to fifty feet from the ground. Many nests are placed in evergreens and ornamental shrubbery at elevations of six to fifteen feet, or in apple and other

orchard trees, or in hedges. In the more open woods nests are placed in small spruce and fir trees at six to ten feet elevation. I have found nests placed on top of broken stubs at six to ten feet elevation. Along rivers and waterways many nests are placed in trees on the banks which lean out over the water. Many times nests are placed on beams under bridges, or in sheds or under the eaves of ice houses on beams. I have found nests placed on top of rail fences and exceptionally one on the bottom rail of a fence not more than two feet from the ground. A typical nest has a foundation of a few twigs and much reindeer lichen (*Cladonia rangiferina*), well cupped with mud, mixed with dry grass, and lined with fine dry grass. An average nest measures in depth five inches outside by one and three-quarters inside, while the diameter is four and a quarter outside by three and a quarter inside. The eggs are generally greenish blue, unmarked, but once I found a set in which the eggs were marked with chestnut brown and one egg in the set almost exactly matched an average egg of the California Thrasher, while the others varied from a few spots to practically none. A set of four eggs found May 29, 1898, at Bangor, measure 1.12 x 0.80, 1.14 x 0.78, 1.14 x 0.80, 1.14 x 0.79.

The Robin has several songs and calls. The well known "wicky, wicky, wicky" is uttered from the top of a tree, seemingly as a call or announcement of its presence. The same call is often uttered by a lusty worm-seeking individual hopping along the lawn, or changing its hop into so rapid a motion of progress as to almost become a run, and when at last it has found and caught the end of a good fat worm and is valiantly struggling to haul its prey out of the hole, with feet braced and head erect as progress is made, final success is greeted by a smothered "wick" as it flies away with its prey. Other calls are a "weack" and a "chirrup," which are uttered as calls of alarm or pleading for the young, or as calls of anxiety, while an anxious "wick" is sometimes uttered for the same cause. When much excited the birds utter a harsh, oft repeated "wick

wick wick wick wick" when endeavoring to drive an enemy from their young. The half smothered and broken "chi-rp" of the young bird just out of the nest and asking for food is well known, and also the gasping, pleading call of mortal agony uttered by a young Robin in the cat's clutches, which will draw every Robin in the neighborhood to make belligerent dashes at the enemy and utter angry cries, for the Robins are good fighters and ever ready to aid one another when need arises. There are other variations of the calls given, including a rather anxiously uttered "perk, perk, perk" or "perky, perky," which may indicate either satisfaction or alarm, according to the tone in which it is uttered.

Of songs the Robin has several. The well known "cheer-up, cheer-up" is uttered more generally in early spring soon after their arrival, though sang somewhat throughout the summer. Then comes the well known rain song which has certain general characteristics, but which is uttered quite variously by different individuals. One bird which I studied quite often usually sang so that his notes with a slight effort of imagination might be easily put in the following words "*We weep, we weep, the rain, the rain, it comes, it comes, we weep, we weep, it is, it is, the rain, the rain, so soon, so soon, sorrow, sorrow, the rain, the rain, it comes, it comes, we drown, we drown, so soon, so soon, the rain, the rain, it comes, it comes*" etc. The rain song is uttered over and over for more or less extended periods, some birds repeating the same syllables over and over, others elaborating more extensively, but the general sadness and the slow, moderate utterance so characterize the "rain song" that it is unmistakable.

There is also a low, softly uttered, ventriloquial song which is uttered in a mere undertone and scarcely traceable to its source, seeming to come from almost everywhere but the spot where the singer is finally located in some tree. Another song uttered with a succession of quick warbles is interpreted by one of my neighbors in the words "Kill-em, cure-em, give-em

physic," which is indeed a good rendering of the rhythm of the song, while occasionally some saucy songster may be heard calling "You id-i-ot, you id-i-ot, you id-i-ot."

The food varies much according to season. In the spring and early summer much of the food, in fact the greater portion consists of insects. Angleworms of course constitute a large part and we all know how the Robins flock to a stretch of grassy lawn after a rain. Various other insects such as beetles, grubs, grasshoppers, crickets, ants, caterpillars, moths and the general run of insects to be picked up from the ground and from the foliage of trees are eaten. As the season advances the Robin knows where the first cherries to ripen are to be found and is ever ready to take his stand in the choicest tree and fill himself with the ripening fruit. They like fruit of almost any kind such as strawberries, raspberries, blackberries and blueberries, cultivated cherries, shadbush plums, bird cherries, choke cherries, black cherries, dogwood berries, arrowwood berries, choke berries and similar wild and cultivated varieties of fruit with a strong leaning to cherries. In later fall they gather into flocks and frequent the mountain ash trees, eating the fruit as long as the supply lasts and in late fall and winter this as well as rotten apples and crabapples are their chief articles of food. Though much more could be written regarding this very beneficial species, it seems that enough has been said to show that ample pay is returned for the few cherries eaten.

Genus *SIALIA* Swainson.

766. *Sialia sialis* (Linn.). Bluebird.

Plumage of adult male: upper parts, wings, sides of head and tail azure blue in spring and summer, but in fall and winter the blue color is somewhat veiled by rusty or pale chestnut edgings; belly white; throat, breast and sides pale chestnut. Plumage of adult female: above with a gray tinge to the less brilliant blue; throat, breast and sides paler chestnut than in male; otherwise in general similar to male. Immature plumage: slaty mouse gray above, more or less spotted on the back and wing coverts with

whitish, sepia bordered spots; below white, mottled on throat, breast and sides with sepia; otherwise very much like adults. Wing 3.90; tail 2.65; culmen 0.62.

Geog. Dist.—Eastern United States, west to the eastern base of the Rocky Mountains; breeding from the Gulf States to Manitoba, Ontario, New Brunswick and Nova Scotia; wintering from southern Illinois and southern New York southward.

County Records.—Androscoggin; common summer resident, (Johnson). Aroostook; locally common summer resident, commoner in the southern sections, seemingly rare in the Woslastook Valley, (Knight). Cumberland; common (?) summer resident, (Mead); common in migration as I have never failed to observe them in numbers when I was passing through various sections of the county in spring and fall, (Knight). Franklin; summer resident, not common at present, (Swain). Hancock; local summer resident, common migrant, (Knight). Kennebec; very rare summer resident, (Powers); very common spring migrant in 1906 at least, (Knight). Knox; summer, (Rackliff). Oxford; breeds, (Nash). Penobscot; after a period of scarcity the species has become common again and in 1905 and 1906 was a common spring and fall migrant and a not rare local summer resident, (Knight). Piscataquis; common summer resident, (Homer). Sagadahoc; common summer resident, (Spinney). Somerset; formerly a common summer resident, for the past two years (1895-1896) a rare migrant, (Morrell); common summer resident in 1906, (Knight). Waldo; in 1906 common migrant and fairly common summer resident, (Knight). Washington; not common summer resident, (Boardman); common summer resident, (Clark). York; rare visitant, formerly common, (Adams); common along line of Boston and Maine R. R. in 1906, (Knight).

Mr. Brown gives the date of arrival in his Catalogue as sometimes the first week in March, usually March seventeenth to the twenty-fifth, while November fourteenth is his latest date seen in fall. Near Bangor the date of arrival is normally the last week of March or the first week of April and the majority have gone in fall by the last week of October. As a migrating bird the species is common throughout the State, more especially in spring but also very common in fall. At these seasons they occur most commonly along the line of railroads, perched on the telegraph wires and poles, as well as on the trees and bushes lining the right of way, and along country highways they also occur in similar situations. Of course considerable numbers migrate across country and in the more open woods, but as a rule the Bluebird is to be found along some line of

human traffic in the greatest abundance, and they use such ways to a great extent as lines of migration.

As a summer resident the Bluebird may be called locally common, absent from some extensive tracts of territory, found in general, however, all over the State as a nesting bird in the vicinity of civilization and less commonly along the natural waterways remote from civilization. In the deep, thick ever-green woods they do not occur as summer residents. As they migrate in fall their mournful warbled "tur-ree, tur-ee" calls attention to the fact that they are going, while in spring they more frequently utter a warbled and less sad sounding call sounding to me like "cherry, cherry, cheer-up." These calls are uttered on the wing or when they have alighted, the spring call being more often given when perched, while the fall migration call is used when on the wing in fall, and to a less degree as a flight call in spring.

During the nesting season they are distinctly inclined to sociability, nesting in bird houses where the English Sparrows have not been introduced to drive them away and interfere with them, and also nesting in holes in apple and other orchard trees, crevices in barns and outbuildings, holes in stump and rail fences, and in general in almost any suitable natural or artificial cavity, either about buildings or holes in stubs along natural highways and about lakes, preferring the settled districts. Nest building sometimes begins very early, as I have found full sets of eggs as early as April twenty-fourth, while I have found young in nests as early as May eighth, but more generally full complements of eggs may be expected in early May. Four to seven, more often five eggs are laid.

Nest building is participated in by both parents, and I have known of a nest containing the full complement of eggs just seven days after the birds began building, indicating that the nest was completed in three days and an egg laid daily thereafter. The parents take turn in incubating and the eggs hatch in twelve days, the young leaving in fifteen days after they are

hatched. Both parents feed them and carefully take away in their bills all the excrement voided by the young. A second brood of young is usually reared, the eggs being laid in early June. Four eggs found at Orono, May 15, 1893, were in a nest composed of dry grasses, fine bark strips and sedges, lined with feathers. This nest was in a deserted Woodpecker hole in a dead stub overhanging the Stillwater River, and seven feet from the ground. The eggs are bluish white and measure 0.85×0.65 , 0.85×0.65 , 0.86×0.63 , 0.86×0.65 . I have seen pure white eggs which were laid by this species and it seems very likely that certain females habitually lay white eggs. The birds usually return to the same locality season after season.

The food is rather varied, consisting however in spring and summer primarily of insects. Much of the food is caught on the wing, but a considerable portion is also gleaned from the foliage of the trees and they even feed on the ground in open gravelly sandy pastures and fields. Among the things I have known them to eat are various species of Noctuidæ, other small moths, butterflies, beetles, grasshoppers, flies, winged ants, ordinary ants, crickets, worms, grubs, caterpillars and mosquitoes. When feeding they spring from a perch into the air to catch any passing insect, or hover before and quickly grasp such as catch their eye on the foliage, bark or ground, or more seldom feed while perched. When the supply of insect food is scarce they will eat wild fruit and berries of different kinds, more habitually during late fall and winter. Among the fruits and berries eaten I can include blackberry, chokeberry, thorn plums, woodbine berries, poison ivy berries, spike-nard, dogwood and arrowwood berries.

HYPOTHETICAL LIST.

Primarily a hypothetical list is intended to indicate those species which may be almost certainly expected to occur, though not as yet positively detected, but in addition I have included here species reported in previous lists and which subsequent investigation has shown are not entitled to be called birds of Maine and are never likely to occur here. Records for the State, based upon specimens which are most certainly escaped captive birds, are given here. Here too are included many species cited as birds of the State by former authorities upon their erroneous interpretation of Mr. Boardman's records, or upon their geographical ignorance. For example, many of Mr. Boardman's birds taken at Grand Menan, or at Indian Island, have been persistently cited as Maine birds by writers of intelligence who should have known better, for both Grand Menan and Indian Island are British territory, and belong to the Province of New Brunswick. It seems necessary that all erroneous records should be cited in each succeeding list, otherwise some busy delver in the records of the past will rake up these old records, assume that the present writer has overlooked them, and in placid self-consciousness re-affirm these old records which have been repeatedly denied or disproven. It is indeed an almost thankless, hopeless task to prevent the periodical bobbing up of erroneous records, as many people reading the original never see the subsequently printed revocations or denials.

As the species included under this section are not birds of Maine, I have not given any description of them or considered their habits and life histories, but have given briefly reasons why they should or should not be considered entitled to be listed at present. Many of the hypothetical species are mentioned in

the analytical keys, given in the main pages of this work, so that if actually found here they will be identified quite readily by aid of the keys.

Family ALCIDÆ. Auks, Murres and Puffins.

Genus CEPPHUS Pallas.

28. *Cephus mandtii* (Licht.). Mandt's Guillemot.

The A. O. U. Check List gives the range of this species in winter as south to Massachusetts, so it seems likely that it may ultimately be found along the coast of Maine. The record printed in the Journal of the Maine Ornithological Society, 1900, p. 34, is erroneous, the specimen being a Black Guillemot.

Family STERCORARIIDÆ. Skuas and Jaegers.

Genus MEGALESTRIS Bonaparte.

35. *Megalestris skua* (Brunn.). Skua.

Perhaps too vaguely apprehended as a bird of Maine, but its range is such that some day a straggler may be taken along our coast.

Family LARIDÆ. Gulls and Terns.

Genus PAGOPHILA Kaup.

39. *Pagophila alba* (Gunn.). Ivory Gull.

A specimen which was taken at Grand Menan, New Brunswick, by Mr. Boardman has been persistently and erroneously cited as a Maine or New England specimen. The species has no present, and probably no future claim to being a bird of Maine.

Genus LARUS Linnæus.

45. *Larus kumlieni* Brewst. Kumlien's Gull.

It is only a question of time when this species will be shown to be a winter coast bird of this State. Mr. Harry Merrill of Bangor has a specimen shot in the vicinity of Eastport, though whether in Maine or New Brunswick territory is not positively known. Mr. Everett Smith states in a letter "I have examined a number of them in the flesh but have never shot them here, although I have observed them alive in Portland Harbor and at Scarboro." He considers this a mere phase of plumage of the White-winged Gull. There is no doubt that Kumlien's Gull is a bird of Maine but it seems better to

await the positive proof attainable by actually taking a specimen which can be preserved for reference.

Family PROCELLARIIDÆ. Fulmars and Shearwaters.

Subfamily FULMARINÆ. Fulmars.

Genus FULMARUS Stephens.

86. *Fulmarus glacialis* (Linn.). Fulmars.

Reported by Mr. Boardman as a winter seabird at Grand Menan, New Brunswick, and also given in the A. O. U. List as occurring as far south as New Jersey. There is no doubt that ultimately specimens will be taken in winter along our coast, even though these sentiments were expressed by me ten years ago and are not yet realized.

Subfamily PROCELLARINÆ. Petrels.

Genus PROCELLARIA Linnæus.

104. *Procellaria pelagica* Linn. Stormy Petrel.

Wrongly ascribed to Maine by previous writers. Mr. Boardman gives it as accidental at Grand Menan, New Brunswick, and possibly some day a straggler may occur along our coast.

Genus OCEANODROMA. Reichenbach.

106. 2. *Oceanodroma cryptoleucura* (Ridgw.). Hawaiian Petrel.

This is a pelagic species which has been taken at Washington, D. C., two specimens, and also at Kent, England and six or seven island localities in the eastern Atlantic. In the Journal of the Maine Ornithological Society, 1902, p. 9, Mr. Norton mentions the species as an ornithological possibility. There are other species of Shearwaters and Petrels which are full as likely to occur, though to enumerate all would be needless. The occurrence of several other species along the coast, especially after storms, is however highly probable and the birds of this group should be examined very carefully.

Family PELECANIDÆ. Pelicans.

Genus PELECANUS Linnæus.

Subgenus LEPTOPELICANUS Reichenbach.

126. *Pelecanus occidentalis* (Linn.). Brown Pelican.

The specimen recorded in Journal of the Maine Ornithological Society, 1901, p. 15, is not entitled to a place as a bird of the State and neither is it

entitled to the name there given to it. In a letter received from Mrs. Eckstorm she informs me that the specimen under consideration is not a Brown Pelican but is some South American species of Pelican, and that it is most certainly an escaped bird, being one of three kept in captivity by a summer resident at Castine.

Family FREGATIDÆ. Man-o'-War Birds.

Genus FREGATA Brisson.

128. *Fregata aquila* Linn. Man-o'-War Bird.

Mr. Smith cites the species as a straggler past the coast of Maine to Nova Scotia, where it has been taken, but there is no evidence to show that the individual under consideration was ever within nearer distance to the Maine coast than the point where it was taken miles away. (Smith, *Forest & Stream*, 20, p. 185). Stearn's "New England Bird Life" p. 342, states:—"Mr. Purdie's manuscript informs us that a specimen was taken but not preserved, about twelve years ago at Boothbay, Maine." If the record had stated that this specimen had been seen and examined, either by Mr. Purdie or some other collector well acquainted with the species, there would have been good grounds for considering it a bird of the State, but in absence of statement as to who identified the bird and the further fact that it was not preserved, render it desirable to consider the occurrence in a hypothetical light at present.

Family ANATIDÆ. Ducks, Geese, and Swans.

Genus CHEN Boie.

169. 1. *Chen caerulescens*. (Linn.). Blue Goose.

A specimen was shot at Lake Umbagog, New Hampshire, October 2, 1896, by Mr. Chas. Douglass. (Brewster, *Auk* 1897, p. 207). This is sufficiently near to Maine to render its occurrence here in the future a possibility.

Genus ANSER. Brisson.

171a. *Anser albifrons gambeli* (Hartl.). American White-fronted Goose.

Given by Mr. Boardman as accidental at Grand Menan, New Brunswick, but the species is not yet known from Maine.

Subfamily CYGNINÆ. Swans.

Genus OLOR Wagler.

180. *Olor columbianus* (Ord). Whistling Swan.

A specimen is said to have been taken near the mouth of the Kennebec River at Brick Island, November, 1881, by William Williams, (Smith, *Forest*



FAMILY GROUP OF BLACK RAIL.

From *The Warbler*, by the kindness of Hon. John Lewis Childs.

and Stream, 20, p. 125). This specimen was not preserved and there seems considerable doubt as to the identity, though probably it is as above, but still lack of certainty makes it seem desirable to treat the species as a possibility

181. *Olor buccinator* (Rich.). Trumpeter Swan.

The specimen recorded so doubtfully under this name (Journal Maine Ornithological Society, 1904, p. 1), proves to be *Olor cygnus* instead, according to a more recent record, so the present species is not entitled to rank as a bird of the State.

Family ARDEIDÆ. Herons, Bitterns, etc.

Genus ARDETTA. Gray.

191.1. *Ardetta neoxena* Cory. Cory's Least Bittern.

A bare possibility in southwestern Maine, though perhaps rather too vaguely apprehended.

Genus EGRETTA Forster.

197. *Egretta candidissima* (Gmel.). Snowy Heron.

Taken by Mr. Boardman at Grand Menan, New Brunswick, and erroneously cited by subsequent writers as a bird of Maine. A specimen of the Little Blue Heron in immature plumage from Washington County was erroneously cited as a Snowy Heron by the press of the State in 1906.

Family RALLIDÆ. Rails, Gallinules and Coots.

Genus PORZANA Vieillot.

Subgenus CRECISCUS Cabanis.

216. *Porzana jamaicensis* (Gmel.). Black Rail.

A specimen which probably belonged to this species was shot at Scarborough, October 4, 1881, but unfortunately was not preserved, (Smith, Forest and Stream, 20, p. 124). This bird should occur along our coast and probably will ultimately be satisfactorily established as entitled to a place in our list.

Family SCOLOPACIDÆ. Snipes, Sandpipers, etc.

Genus MACRORHAMPHUS Leach.

232. *Macrorhamphus scolopaceus* (Say). Long-billed Dowitcher.

Mr. Brown states in his Catalogue of the Birds of Portland, p. 26, "I am confident that the western race, *scolopaceus*, visits us occasionally, although

I have never met with it myself. Supposed examples of this form have twice been sent me for identification, in both instances, unfortunately, during my absence from town."

Genus EREUNETES Illiger.

247. *Ereunetes occidentalis* Lawr. Western Sandpiper.

Of quite frequent occurrence along the Atlantic coast, and should be looked for on the Maine coast.

Family CHARADRIIDÆ. Plovers.

Genus OCHTHODROMUS. Reichenbach.

280. *Ochthodromus wilsonius* (Ord). Wilson's Plover.

Given in A. O. U. List as casual north to Nova Scotia.

Family TETRAONIDÆ. Grouse, Partridges, etc.

Genus BONASA Stephens.

300. *Bonasa umbellus* (Linn.). Ruffed Grouse.

Included in many previous lists, though there is no reason to believe it is entitled to be called a bird of Maine, and no specimens have been seen which were referable to this species.

Family FALCONIDÆ. Vultures, Falcons, Hawks, Eagles, etc.

Subfamily ACCIPITRINÆ. Kites, Buzzards, Hawks,
Goshawks, Eagles, etc.

Genus HALIÆTUS. Savigny.

352a. *Haliæetus leucocephalus alascanus* C. H. Townsend.
Northern Bald Eagle.

Possibly to be found in Maine in winter, though on the whole its occurrence is rather doubtful.

Family STRIGIDÆ. Barn Owls.

Genus STRIX Linnaeus.

365. *Strix pratincta* Bonap. American Barn Owl.

Cited in Smith's List and elsewhere upon the evidence of the notorious "Falmouth specimen," of which the record has been withdrawn. The Barn Owl is not to be expected as a bird of this region.

Family BUBONIDÆ. Horned Owls, etc.

375b. *Bubo virginianus arcticus* (Swains.). Arctic Horned Owl.

375d. *Bubo virginianus saturatus* Ridgw. Dusky Horned Owl.

The two preceding were recorded by Mr. Norton in Proceedings of the Portland Society of Natural History for April 1, 1897, and admitted together with an additional record of the first one by Mr. Nash in A List of Birds of Maine, p. 69. As stated in the body of the present work, under *Bubo virginianus*, it is very evident from more careful recent study that all our Great Horned Owls are referable to one form, tentatively treated as *B. virginianus*, but in light of the key given in Mr. Oberholser's very exhaustive monograph on this group (Proc. U. S. Nat. Mus. 27, pp. 177-192) it seems likely that all our Maine birds, including Mr. Norton's specimen of *saturatus*, may prove referable to Mr. Oberholser's new subspecies, *Asio magellanicus heterocnemis*, though until the name has been adopted by the A. O. U. Committee on Nomenclature and the whole subject considered by them, it is better to let our Maine species stand as *Bubo virginianus*.

Family PICIDÆ. Woodpeckers.

Genus DRYOBATES Boie.

393a. *Dryobates villosus leucomelas* (Bodd.). Northern Hairy Woodpecker.

Possibly to be found in winter near our northern boundary.

Family ICTERIDÆ. Blackbirds, Orioles, etc.

Genus MEGAQUISCULUS Cassin.

513a. *Megaquisculus major* (Vieill.). Boat-tailed Grackle.

Recorded in Smith's List as seen at Second Lake, Washington County. This species is not even a bird of New England, and it must have certainly been a case of mistaking the Bronzed Grackle for it.

Family FRINGILLIDÆ. Finches, Sparrows, etc.

Genus AMADINA.

Amadina rubronigra.—

An example of this species, beyond doubt an escaped cage bird, is recorded by Mr. Allen in the Bulletin of the Nuttall Ornithological Club, 5, p. 120, as taken in Maine, and is mentioned here merely as a matter of interest. It is an African species of Finch.

Genus GUIRACA Swainson.

597. *Guiraca caerulea* (Linn.). Blue Grosbeak.

Records of this species have been attributed to Maine and bandied about in various publications, being perhaps first mentioned in the Proceedings of the Boston Society of Natural History, 9, p. 127, and subsequently in New England Bird Life. Mr. Boardman stated to me in a letter, written just previous to publication of List of Birds of Maine, that two specimens were taken at GRAND MENAN, NEW BRUNSWICK, and that the various records referred to these, and that it was not a bird of Maine.

Genus CYANOSPIZA Baird.

601. *Cyanospiza ciris* (Linn.). Painted Bunting.

An adult male, clearly an escaped captive bird, was found dead in the yard of Miss C. S. Eastman in Portland, June 10, 1904, and through Mr. W. H. Brownson was brought into Mr. Norton's possession and preserved, (Journal Maine Ornithological Society, 1904, p. 56).

Family VIREONIDÆ. Vireos.

Genus VIREO Vieillot.

631. *Vireo noveboracensis* (Gmel.). White-eyed Vireo.

Given by Mr. Smith in his list, but no specimen was taken in the State, and being essentially a bird of the Carolinian fauna, the occurrence in Maine is more than doubtful.

Family MNIOTILTIDÆ. Wood Warblers.

Genus HELMITHEROS Rafinesque.

639. *Helmitheros vermivorus* (Gmel.). Worm-eating Warbler.

Recorded from Maine by Verrill in Proceedings of Essex Institute, 3, p. 156, but though I have not seen the record in the publication cited, its occurrence seems doubtful, being ignored by subsequent writers, still there is a possibility that the species does occur, the only question being as to whether or not a mistake in identification has been made. Mr. J. Waldo Nash has written that he saw a pair of these birds with young at Norway in 1893.

Genus HELMINTHOPHILA Ridgway.

646. *Helminthophila celata* (Say). Orange-crowned Warbler.

Audubon records the species as breeding in eastern Maine, but it seems very likely it is a mistake, and subsequent writers have so regarded his statement. There is said to be a set of eggs in the Smithsonian Institution



NEST AND EGGS OF THE BICKNELL'S THRUSH.

From *The Warbler*, by the kindness of Hon. John Lewis Childs.

which were collected near Brunswick, Maine, and referred to this species' but the data to the set seems to be lacking, and I am more than inclined to believe that the Nashville Warbler is the really responsible species for our Orange-crowned Warbler records.

Family TURDIDÆ. Thrushes, Solitaires, Stonechats, Blue-birds, etc.

Genus HYLOCICHLA Baird.

756a. *Hylocichla fuscescens salicicola* Ridgw. Willow Thrush.

This subspecies is said to breed in Newfoundland and to have been taken in Massachusetts, Rhode Island and Connecticut, so we may justly feel warranted in seeking for it in Maine during the migrations.

757a. *Hylocichla aliciæ bicknelli* (Ridgw.). Bicknell's Thrush.

Though almost certainly a breeding species in Maine, it is kept in the possibilities at present for the very reason that no specimen has been actually taken, and there is a chance for an open question regarding the actual identification of species so closely related to Alice's and to the Olive-backed Thrushes until one has been taken here. Bicknell's Thrush *must* occur however, both as a breeding bird in those limited areas of Hudsonian fauna which occur in Maine, and as a migrant species through other sections.

Mr. F. H. Allen wrote me some years back as follows;— "June 22 and 23 of this year (1897) I found Bicknell's Thrush present and doubtless breeding at Mt. Ktaadn. I heard five males singing, four along the southern slide, and one on the tableland. None were shot." Mr. D. W. Sweet has also recorded hearing this species singing at Mt. Abraham, June 22, 1906, see Journal of Maine Ornithological Society, 1906, pp. 81-84. Diligent search of the higher mountains will almost certainly positively prove the observations above quoted. There seems to be some reason for suspecting that search of some of the wooded islands along the coast from Mount Desert eastward may show the presence of this species as a summer resident, the flora of that region being rather indicative of this as a possibility.

Genus SAXICOLA Bechstein.

765a. *Saxicola ænanthe leucorhoa* (Gmel.). Greenland Wheatear.

The Wheatear has been most persistently accredited to Maine in recent as well as former publications, though all such records have been chased down

and denied as fast as they have appeared. It is a good illustration of the fact that old and erroneous records seem bound to bob up serenely in spite of explanations and denials. There are no Maine records of the Wheatear which will sustain investigation. The records for both Maine and New England seem to be based on two specimens, one of which was taken by Mr. Boardman at Grand Menan, New Brunswick, and the other August 25, 1879, on Indian Island, which is near Eastport but in NEW BRUNSWICK.

SUMMARY.

The number of species given in the list as positively occurring, or as having occurred of their own free will within our limits, or being introduced to have persisted until the present time is 327. Of these some 26 are permanent residents, including 2 introduced species. The summer residents include 115 species. Those occurring chiefly or entirely as migrants are 75. The winter residents and winter visitors of fairly general or regular occurrence include 40 species. The accidental visitors, casual visitors and stragglers include 67 species, and the remaining 4 species formerly occurred but are now extinct, 3 utterly extinct and the other one extinct as far as its occurrence in the northeast is concerned.

The synopsis which follows shows the status of the various species according to my individual judgment, though others consulting the data given in the text might arrive at different conclusions in some instances.

PERMANENT RESIDENTS.

The majority of the 26 species given here are resident, but those designated by an asterisk are chiefly or entirely confined to the Canadian fauna during the breeding season. It is highly probable that in the case of some species the same individual birds do not remain in one locality throughout the year, but birds which summer here go south for the winter, and are replaced during that season by individuals which have summered north of our limits.

*Black Guillemot, *Herring Gull, *Leach's Petrel, Bob-White (?), *Canada Grouse, Canadian Ruffed Grouse, American Long-eared Owl, Short-eared Owl, Barred Owl, *Saw-whet Owl, Screech Owl, Great Horned Owl, Hairy Woodpecker, Downy Woodpecker, Northern Pileated Woodpecker, Blue Jay, *Canada Jay, *Northern Raven, American Crow, American Crossbill, White-winged Crossbill, White-breasted Nuthatch, *Red-breasted Nuthatch, Chickadee.

INTRODUCED SPECIES—Domestic Pigeon, English Sparrow.

SUMMER RESIDENTS.

The species which occur in greatest numbers as summer residents include 115 birds, some of which might have been equally well included under one of the other headings. Those designated by an asterisk have been known to occur in winter, though usually rare at this season.

Pied-billed Grebe, *Loon, Laughing Gull, Common Tern, Arctic Tern, Black Duck, Wood Duck, American Bittern, Least Bittern, Great Blue Heron, Green Heron, Black-crowned Night Heron, Virginia Rail, Sora, American

Woodcock, Bartramian Sandpiper, Spotted Sandpiper, Piping Plover, Mourning Dove, Marsh Hawk, Sharp-shinned Hawk, Cooper's Hawk, *Red-tailed Hawk, Red-shouldered Hawk, Broad-winged Hawk, *Bald Eagle, American Sparrow Hawk, American Osprey, Yellow-billed Cuckoo, Black-billed Cuckoo, Belted Kingfisher, Yellow-bellied Sapsucker, Red-headed Woodpecker, *Flicker, Whip-poor-will, Nighthawk, Chimney Swift, Ruby-throated Hummingbird, Kingbird, Crested Flycatcher, Phoebe, Olive-sided Flycatcher, Wood Pewee, Yellow-bellied Flycatcher, Alder Flycatcher, Least Flycatcher, Bobolink, Cowbird, Red-winged Blackbird, Meadow Lark, Baltimore Oriole, Bronzed Grackle, *Purple Finch, *American Goldfinch, Vesper Sparrow, Savanna Sparrow, Sharp-tailed Sparrow, Acadian Sharp-tailed Sparrow, White-throated Sparrow, Chipping Sparrow, Field Sparrow, Slate-colored Junco, Song Sparrow, Swamp Sparrow, Towhee, Rose-breasted Grosbeak, Indigo Bunting, Scarlet Tanager, Purple Martin, Cliff Swallow, Barn Swallow, Tree Swallow, Bank Swallow, *Cedar Waxwing, Loggerhead Shrike, Red-eyed Vireo, Philadelphia Vireo, Warbling Vireo, Yellow-throated Vireo, Blue-headed Vireo, Black and White Warbler, Nashville Warbler, Tennessee Warbler, Northern Parula Warbler, Cape May Warbler, Yellow Warbler, Black-throated Blue Warbler, *Myrtle Warbler, Magnolia Warbler, Chestnut-sided Warbler, Bay-breasted Warbler, Blackburnian Warbler, Black-throated Green Warbler, Pine Warbler, Yellow Palm Warbler, Oven-bird, Water-Thrush, Mourning Warbler, Maryland Yellow-throat, Wilson's Warbler, Canadian Warbler, American Redstart, Catbird, Brown Thrasher, House Wren, Winter Wren, Short-billed Marsh Wren, Brown Creeper, *Golden-crowned Kinglet, Wood Thrush (very rare), Wilson's Thrush, Olive-backed Thrush, Hermit Thrush, *American Robin, Bluebird.

MIGRANTS OR TRANSIENT VISITORS.

I have here included some 75 species whose status seems most nearly represented by this heading. Those designated by an asterisk are summer residents to a greater or lesser extent. Those marked with a dagger (†) are known to have occurred in winter, some being regular winter residents in limited numbers, while others are very rarely observed at this season.

*†Horned Grebe, †Red-throated Loon, Pomarine Jaeger, Parasitic Jaeger, Long-tailed Jaeger, Ring-billed Gull, †Bonaparte's Gull, Caspian Tern, *Roseate Tern, Greater Shearwater, Sooty Shearwater, †Gannet, *†American Merganser, *†Red-breasted Merganser, *Hooded Merganser, †Mallard, Baldpate, Green-winged Teal, *Blue-winged Teal, Shoveller, Pintail, *Redhead, American Scaup Duck, Lesser Scaup Duck, *Ring-necked Duck, *†American Goldeneye, *†Buffle-head, *Ruddy Duck, Lesser Snow Goose, Canada Goose, Brant, *Yellow Rail, Florida Gallinule, American Coot, *Red Phalarope, Northern Phalarope, *Wilson's Snipe, Dowitcher, Stilt Sandpiper, Knot, Pectoral Sandpiper, White-rumped Sandpiper, Baird's Sandpiper, *Least Sandpiper, Red-backed Sandpiper, Semipalmated Sandpiper, Sanderling, Hudsonian Godwit, Greater Yellow-legs, Yellow-legs, *Solitary Sandpiper, Willet, Buff-breasted

Sandpiper, Hudsonian Curlew, Eskimo Curlew, Black-bellied Plover, American Golden Plover, Killdeer, *Semipalmated Plover, Turnstone, Passenger Pigeon, *Duck Hawk, *Pigeon Hawk, *Rusty Blackbird, *†Pine Siskin, Ipswich Sparrow, Nelson's Sparrow, *White-crowned Sparrow, †Tree Sparrow, *Lincoln's Sparrow, Fox Sparrow, *Black Poll Warbler, American Pipit, *Ruby-crowned Kinglet, Gray-cheeked Thrush.

WINTER RESIDENTS OR WINTER VISITORS.

Under this heading I have placed 40 species. Those preceded by an asterisk are known to occur throughout the entire year, although some of these, notably the Scoters, do not breed within our limits.

Holboëll's Grebe, *Puffin, Murre, Brünnich's Murre, Razor-billed Auk, Dovekie, Kittiwake, Glaucous Gull, Iceland Gull, Great Black-backed Gull, Cormorant, *Double-crested Cormorant, Red-legged Black Duck, Barrow's Golden-eye, *Old Squaw, Harlequin Duck, Northern Eider, *American Eider, King Eider, *American Scoter, *White-Winged Scoter, *Surf Scoter, Purple Sandpiper, *American Goshawk, American Rough-legged Hawk, Great Gray Owl, Richardson's Owl, Snowy Owl, American Hawk Owl, *Arctic Three-toed Woodpecker, *American Three-toed Woodpecker, Horned Lark, Prairie Horned Lark, *Pine Grosbeak, *Redpoll, Snowflake, Lapland Longspur, Bohemian Waxwing, Northern Shrike, *Hudsonian Chickadee.

ACCIDENTAL VISITORS, CASUAL VISITORS AND STRAGGLERS.

It seems very hard to draw any definite line between birds which are accidental or casual and those which are stragglers. The 67 species given here are either not regular in their occurrence, or, in the case of Wilson's Petrel and one or two others, birds which migrate northwards at the close of the breeding season for some unknown reason. Birds placed here, with the evidence now at hand may ultimately be proved of regular occurrence, and they can then be assigned to some other group.

Black Throated Loon, Tufted Puffin, Sabine's Gull, Gull-billed Tern, Least Tern, Sooty Tern, Black Tern, Black Skimmer, Pintado Petrel, Wilson's Petrel, American White Pelican, Gadwall, European Teal, Canvas-back, Greater Snow Goose, Hutchin's Goose, Whooping Swan, Wood Ibis, Yellow-crowned Night Heron, American Egret, Little Blue Heron, King Rail, Clapper Rail, Corn Crake, Purple Gallinule, Wilson's Phalarope, American Avocet, Black-necked Stilt, Curlew Sandpiper, Marbled Godwit, Ruff, Long-billed Curlew, Belted Piping Plover, American Oystercatcher, Willow Ptarmigan, Turkey Vulture, Black Vulture, Swainson's Hawk, Golden Eagle, White Gyr Falcon, Gray Gyr Falcon, Gyr Falcon, Black Gyr Falcon, Arkansas Kingbird, Starling, Yellow-headed Blackbird, Orchard Oriole, Bullock's Oriole, Evening Grosbeak, Hoary Redpoll, Holboëll's Redpoll, Greater Redpoll, Chestnut-collared Longspur, Grasshopper Sparrow, Seaside Sparrow, Cardinal, Dickcissel, Louisiana Tanager, Summer Tanager, Prothonotary Warbler, Louisiana Water-thrush,

Connecticut Warbler (probably rare migrant), Yellow-breasted Chat, Mockingbird, Tufted Titmouse, Carolina Wren, Blue-gray Gnatcatcher.

SPECIES NOW EXTINCT IN THE STATE.

The Great Auk formerly occurred as a winter visitant but it is now extinct. The Wild Turkey formerly occurred in the State, probably being a permanent resident. It has not been noted here for many years. The Labrador Duck has been extinct for many years though formerly occurring along the coast in winter. The Post Pliocene Murre is known only from fossil remains.

FAUNAL AREAS.

Zoogeography, or the geographical distribution of species, is a comparatively new science, but nevertheless, one destined to prove of the utmost economic importance to the agriculturist. Plants and animals are naturally found in certain climates where the conditions of temperature and surroundings are congenial to them. Some species have the power of adapting themselves to circumstances and are found in many diverse climates, while others are exclusively confined to certain regions over which the same conditions prevail, and need not be looked for elsewhere. These latter are said to be indigenous to a life area, and by aid of these species we are enabled to divide the country into an ultimate number of life areas which are termed faunae. When by study and observation of a certain plant or animal in various localities, we have finally arrived at the conclusion that wherever we have found that particular species the conditions of climate, surroundings, etc., are uniform, we may then safely say, on hearing from some outside observer that this same species is found in his locality, just what the climate and surroundings of that locality are, without ever having seen it. Of course we are always open to error due to the fact that this species may be able to adapt itself to other conditions, but from a close and long-continued study of certain North American plants and animals, it has been almost positively demonstrated that they are exclusively confined to regions over which similar conditions prevail. In some cases the primary life areas are characterized by the prevalence over them of entire families or genera, while in the case of the minor or faunal areas the prevalence of certain species or subspecies and, equally important, the absence of others characteristic of other areas, are links in the chain of evidence by which we are enabled to map the limits of these divisions.

The change from one area to another is not at all abrupt, but instead as we near their common boundary we find species common to both occurring

on the same grounds. In such cases, the prevalence of the species of one of the faunæ will result in determining the area to which that region belongs.

It is of the utmost importance to note the fact that these life areas do not regularly blend with one another, but the points of their intergradation may be compared to the meeting of the water and land along the irregular, indented coast of Maine. The irregularity of these life areas and the mapping out of their various spurs and projections are of the utmost importance to the farmer. By utilizing the northern projections of a more southern fauna he is able to grow its indigenous plants just so much nearer to a northern market, while some dozens of miles to the eastward his neighbor may be utilizing a southward extension of a colder life area to grow boreal plants so much nearer to a southern market. In general the southern extensions of the colder areas will be found along the higher mountain ranges, while the northern branches of the warm areas are in the lowlands.

With these explanations we will proceed to an enumeration of the various primary and secondary areas. The entire world has been divided into eight primary life areas, termed Realms, as follows:

(1) The Arctic Realm extends across the northern continents, reaching from the northern limit of forest growth to the pole. It is remarkable for the paucity and specific identity of the forms of life occurring throughout it.

(2) The North Temperate Realm extends from the northern limit of forest growth south to the palm tree belt.

(3) The American Tropical Realm includes tropical America.

(4) The Indo-African Realm consists of all Africa, except the northern portion, and tropical Asia with its islands.

(5) The South American Temperate Realm includes temperate South America.

(6) The Australian Realm embraces Australia and the islands of Oceanica adjacent thereto.

(7) The Lemurian Realm is confined to the island of Madagascar.

(8) The Antarctic Realm occupies the same position in the south as does the Arctic in the north, and the species inhabiting it are likewise few and of general distribution. The birds are mainly pelagic.

All of extreme northern North America is within the Arctic Realm, south of which comes the North Temperate Realm which extends quite to the southern boundary of the United States, except in Florida and Texas where the American Tropical Realm enters the southern portion of these two states.

Owing to lack of space I will not enter into a discussion of the minor life areas into which each Realm is divided save in the case of such as directly concern Maine. Those wishing more complete information are referred to the following publications:—The Geographical Distribution of North American Mammals, J. A. Allen, Bulletin American Museum of Natural History, Vol. 4, pp. 193-243; the Geographical and Geological Distribution of North American Mammals; The Origin and Distribution of North American Birds,

J. A. Allen, *The Auk*, Vol. 10, pp. 99-150; various reports of the U. S. Department of Agriculture, Division of Ornithology and Mammalogy also contain interesting articles on the subject.

The North Temperate Realm is divided into regions of which the North American Temperate Region alone concerns us. This in turn is further divided into two subregions, the Cold Temperate and the Warm Temperate. The Cold Temperate Subregion is divided into four faunæ of which two, the CANADIAN and HUDSONIAN are to be distinguished in Maine.

The Warm Temperate Subregion is divided into two provinces, a Humid or Eastern Province, and an Arid or Western Province. The Humid Province is divided into the Appalachian and Austroriparian Subprovinces, of which the Appalachian alone interests us. This latter is divided into three faunæ, the more northern of which is known as the ALLEGHANIAN Fauna and which includes much of southwestern Maine.

We have then the Cold Temperate Subregion, represented by the Hudsonian and Canadian Faunæ, and the Warm Temperate Subregion, represented by the Alleghanian Fauna in Maine.

HUDSONIAN FAUNA.

The Hudsonian Fauna is confined to the higher mountains of Maine, also including local areas in the Woolastook Valley and local spots along the coast from Mount Desert Island eastward. The summits of Mount Katahdin, Mount Abraham, Saddleback Mountain and possibly a few others of the higher mountain peaks may be considered as Hudsonian. There are most certainly local Hudsonian infusions in the Woolastook, St. Francis and Allegash Valleys. Such plants as *Diapensia lapponica*, *Rhododendron lapponicum*, *Bryanthus taxifolius*, *Arctostaphylos alpina*, *Saxifraga stellaris comosa*, *Loiseleuria procumbens*, *Arenaria grœnlandica*, *Lycopodium selago*, *Castilleja pallida septentrionalis*, *Hierochloa alpina*, *Ledum palustre dilatatum*, *Anemone multifida* and *Poa glauca* may be considered as Hudsonian Faunal plants. Among the birds we may include the Hudsonian Chickadee, White-crowned Sparrow and Bicknell's Thrush when found as breeding birds, and the occurrence regularly of these birds in summer may be considered as decisive regarding the faunal area.

CANADIAN FAUNA.

Various characteristic trees, birds and animals as well as plants of various sorts are more or less characteristic of the Canadian Fauna. Forests of Fir and Spruce are quite typical of Canadian Faunal regions. Among the animals such species as the Canada Porcupine, Northern Hare, Red Squirrel and Jumping Mouse are characteristic. Likewise the following named birds are fairly characteristic.

BIRDS OF THE CANADIAN FAUNA.

Black Guillemot, American Herring Gull, Leach's Petrel, Red-breasted Merganser, American Goshawk, Olive-sided Flycatcher, Yellow-bellied Fly-

catcher, Canada Jay, Northern Raven, Rusty Grackle, Pine Siskin, Acadian Sharp-tailed Sparrow, White-throated Sparrow, Slate-colored Junco, Red-breasted Nuthatch, Olive-backed Thrush, Golden-crowned Kinglet, Water-Thrush, Brown Creeper, Winter Wren, Myrtle Warbler, Black-throated Blue Warbler, Bay-breasted Warbler, Black Poll Warbler, Wilson's Warbler, Magnolia Warbler, Alder Flycatcher.

The above is merely a partial list of the birds which distinguish the limits of this fauna. Some of these occur in slight numbers in the Alleghanian, while others are extreme Canadian types and occur well within its limits. However they may all be regarded as fairly distinctive.

The Alleghanian Fauna is characterized by such trees as the pine and oak. The birds are given below.

Least Bittern, Green Heron, Mourning Dove, Meadow Lark, Yellow-billed Cuckoo, Field Sparrow, Sharp-tailed Sparrow, Wood Thrush, Towhee, Brown Thrasher, House Wren, Bob-white.

The birds cited above may be considered fairly typical of their respective faunæ, and the prevalence of the species of one over those of the other will settle to which fauna a given locality belongs.

Previous observers have assigned the dividing line between our faunæ to a somewhat indefinite locality near Mount Desert Island. Beginning here, the Alleghanian Fauna has been stated to include the territory south of the line of mountains which run in a southwesterly direction across the State. Part of this is wrong in view of information of which I am now possessed.

We may safely assign to the Canadian Fauna the entire granite-ridged, spruce-covered sections of the coast save a few local Hudsonian infusions. The Laurentine Hills with their outspurs present features which are in strong contrast to those of the southwestern part of the State. The southern limit of growth of the low, stunted spruces of the coast is coincident with the distribution of the majority of Canadian birds, although many are not found quite so far southwards.

In a recent article regarding the "Sharp-tailed Finches of Maine" Mr. A. H. Norton speaks of the habitat of the Acadian Sharp-tail as follows: "North of Scarboro, beginning with Cape Elizabeth, its eastern boundary, the coast presents an uneven or hilly face of rocks, indented with numerous coves and bays, studded with dry ledgy islands. Between the hills are innumerable arms of the sea often extending as "tide rivers" or fjords several miles inland, bordered by narrow swales. Coincident with these features is the low spruce woods, so conspicuous a feature of the Maine coast, so characteristic of the scanty soiled granite ridges, and the fog drenched coast of the northeast. Very different in appearance are the broad marshes of Scarboro and western Maine, backed by soil-clad verdant slopes, with pine and hard woods replacing the spruce." (Cf. Norton, Proc. Port. Soc. Nat. Hist., Vol. 2. pp. 100-101).

In my judgment he has here outlined the dividing line between the two faunæ, and the Canadian thus extends along the coast to Cape Elizabeth. A few miles back in the interior these Canadian features cease, and we will

find ourselves in the midst of Alleghanian surroundings. These latter extend eastward in the interior into Lincoln County, where the two regions seemingly meet, as is evidenced by the pine trees and spruces being about equal in numbers. To the northward the Alleghanian surroundings predominate through much of Androscoggin, Cumberland, Kennebec, Lincoln and Oxford.

Save for the local Hudsonian areas previously mentioned all of the region to the eastward of the Penobscot River, together with that north from the northern parts of the five before-mentioned counties is Canadian in character. Of this there can be no doubt. We may therefore say that Aroostook, Franklin, Hancock, Knox, Penobscot, Piscataquis, Somerset, Waldo and Washington Counties are Canadian save the few local Hudsonian and Alleghanian areas mentioned elsewhere. A narrow Canadian strip extends along the coast through Lincoln and Sagadahoc into Cumberland. The northern parts of Androscoggin, Kennebec and Oxford also extreme western Oxford and Cumberland may be also included in this fauna.

ALLEGHANIAN FAUNA.

The Alleghanian includes all of York County and such parts of Androscoggin, Cumberland, Kennebec, Lincoln, Oxford and Sagadahoc as have not been previously designated as Canadian. The local area near Bangor inhabited by the Short-billed Marsh Wren is Alleghanian.

Many local isolated areas of one fauna with another will yet be located by further research. These local areas will ultimately be mapped out with a precision not now possible.

The faunal areas as determined herewith are largely the result of my own personal field observations of recent years, but where the observations of others are used as a basis of conclusions due credit has been given.

BIBLIOGRAPHY.

I have given under the above title a partial list of various books and periodicals which contain articles relating more or less directly to the Ornithology and Oology of Maine. This list is neither complete nor does it claim to be especially exact, being intended to serve merely as an aid to those desiring to know what has been previously written relating to our birds. Only a few of the publications cited are devoted exclusively to Maine birds, the vast majority being devoted to North American birds in general.

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